NORTHROP NEWS

ELECTRONICS

VOLUME 31-32-33

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NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 31, No. 1 | January 1973

DAVID N. FERGUSON, general manager of the Electronics Division, will be the guest speaker at the official installation of the recently elected members of the 1973 board of control for the Electronics Division Management Club. The dinner meeting installation will be held Feb. 21, at Lococo's Restaurant, 612 Sepulveda, Manhattan Beach. The new officers are, from left, Chuck Cook, vice president; Jim Mayberry, secretary; Jim Brust, president; Ruth Geller, treasurer; and Tom Pryor, sergeant-at-arms.

Miller Appointed Northrop Group Vice President

Thomas V. Jones, president of Northrop, has announced that Ross F. Miller has been appointed the position of group vice president effective Jan. 4. The following organizations will be reporting directly to Mr. Miller: Electronics Division, The Hallicrafters Company, Wilcox Electric, Inc., Page Communcations Engineers, Inc., and Page Communications Engineers—Iran.

In effecting this organizational change, Mr. Jones said, "As Northrop has grown and diversified over the years, there have been continuing changes in the organizational structure of the company, each one of which has been designed to establish the most effective management alignment for the particular needs of the existing and foreseeable situation. These organizational changes have been evolutionary in nature. Each has been carefully planned in advance and implemented in accordance with that planning."

Mr. Jones added that, "The decision to effect this change in the basic Northrop structure was made at the time Mr. Miller was named president of Page Communications Engineers — Iran, and it was planned then that it would become effective at this time. The Page contracts in Iran are the most important overseas commitments Northrop has and there exist future opportunities in that country which hold significant potential for the company. Because of this, Mr. Miller was assigned the responsibility of leading the Northrop — Page effort in Iran and he will continue to devote all of his time to ensuring the complete success of all our Iranian communication and related operations. By bringing under his direction those elements which are or may be involved in these operations, the total resources of the company can be more efficiently and effectively brought to bear on existing and future requirements."

Mr. Miller

In concluding the announce-

(See MR. MILLER, page 6)

NGFG System Helps to Support AWACS Aircraft

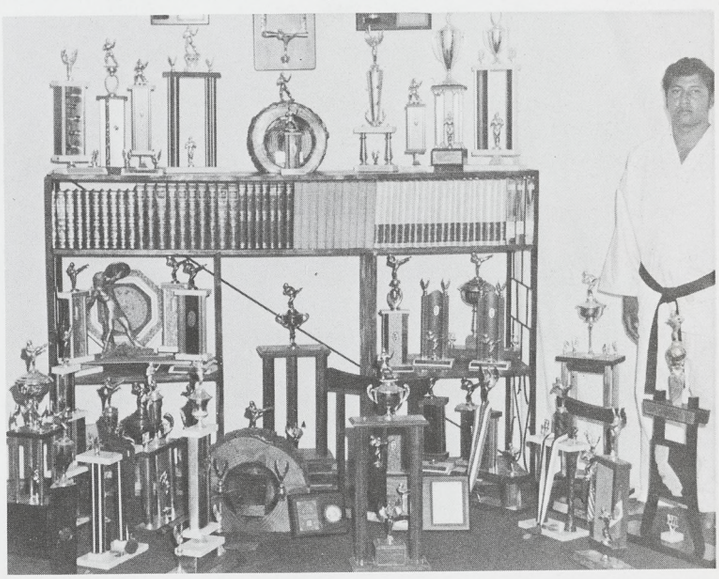
Another application of the hybrid inertial-Omega doppler system is the Navigation Guidance Functional Group (NGFG) developed by the Electronics Division for use in the Airborne Warning and Control System (AWACS).

The system, produced under contract to The Boeing Company, is designed to provide instantaneous measurement of air vehicle heading, attitude, velocity, drift angle, ground speed and position to the central data processing system. In addition, the system provides normal navigation and guidance capability for the AWACS aircraft.

Existing off-the-shelf navigation sensors are integrated into a highly accurate system utilizing all of the capabilities of each of the sensors. The dual Delco Carousel IV inertial navigators, the Northrop AN/ARN-99 Omega navigation system and the Ryan AN/APN-200 Doppler, together with the computer programs located in the Delco and Northrop computers, provide fully automated navigation, guidance and control functions for the AWACS aircraft.

The primary on-board references are the dual inertial systems, providing the precise attitude, velocity, and position required by the AWACS mission. The accuracy of these inertial systems is maintained throughout the long flight time by providing the position and velocity damping necessary from the Omega and Doppler systems. The combination of this data from all

(See NGFG, page 6)



ON DISPLAY are only some of Steve Fisher's trophies. Steve, son of Josephine Fisher, Electrical Assembler, Hawthorne Electronics facility, holds a second degree black belt in Shorin-Ryu karate, and has opened his own karate studio at 11926 Hawthorne Blvd. The youngest member of the Hawthorne Chamber of Commerce, Steve has been studying the art for more than seven years under several masters. He has traveled all over the U.S. to compete in tournaments, and has won more than 60 trophies and awards in both "fighting" and "form."

ANGLERS HOLD AWARD, ELECTION MEETING

The Northrop Sea Anglers annual awards meeting and election was held Jan. 5 at the NRC Clubhouse. The 1973 Sea Angler commissioner is Elmer Baldwin, Engineering Standards, Electronics Division.

Some of the award winners were: Elmer Baldwin, "Fisherman of the Year;" Frank McGinley, "Largest Yellowtail;" Stan Ecklund, "Largest Albacore and Bonita;" and Chuck Fuller who won a special award for a 12-inch brook trout.

Anyone interested in joining the fun and competition in the Sea Anglers should contact the Personnel Activities office at your division.

Social Security Taxes, Benefits Increase

By Frank Smith

Deductions from wages are higher starting in 1973 – so much higher that the decreased size of the actual take-home check comes as a shock to many of us. We have asked Frank Smith, Corporate director, Industrial Relations, to explain some of the reasons for increased withholding of social security taxes. The Northrop News will periodically publish articles by Northrop executives explaining factors affecting take-home pay, benefits and other aspects of our Northrop employment. – Editor

Your social security taxes will be sharply higher this year because of a bill passed by Congress late last year. The maximum tax, $468 in 1972, will jump to $631.80 in 1973, up 35 per cent. Partly this is because the tax rate goes up from 5.2 per cent to 5.85 per cent; partly it is because the maximum amount on which you must pay taxes goes from $9,000 to $10,800. Whatever your social security tax, remember that Northrop pays an equal amount into your account.

In 1974 the tax rate will stay the same (5.85 per cent), but it will be payable on the first $12,000 of annual earnings instead of the first $10,800. So, if you make $12,000 or more in 1974, your social security tax will be $702 instead of $631.80. And Northrop will continue to match your social security payments dollar for dollar.

What will you get for these higher taxes? The benefit changes made by Congress are the most important and far-reaching since the law was put on the books in 1938:

All retirement, disability, and survivors' benefits go up 20 per cent. Top monthly benefit for a retired worker — formerly $295.40 — goes to $404.50, and the maximum family benefit — previously $517 — becomes $707.90. But it will be years before anyone can actually receive these amounts. For 1973, the maximum individual benefit will be about $266 per month, and the ceiling for a couple will be about $399.

Guaranteed Minimum

A minimum benefit of $85 per month is guaranteed to retirees who have worked under social security for 20 years or more. Each year above 20 is worth $8.50 more, up to $170 for the man with 30 years or more of coverage. These minimums won't mean much to most people, since they'll get higher benefits on their earnings.

The method of figuring benefits for men is changed in a way that will mean bigger benefits for them. As things stand now, women retirees receive slightly more than men who retire under the same conditions. This advantage for women will be ended by 1975, and the same rules will apply to all.

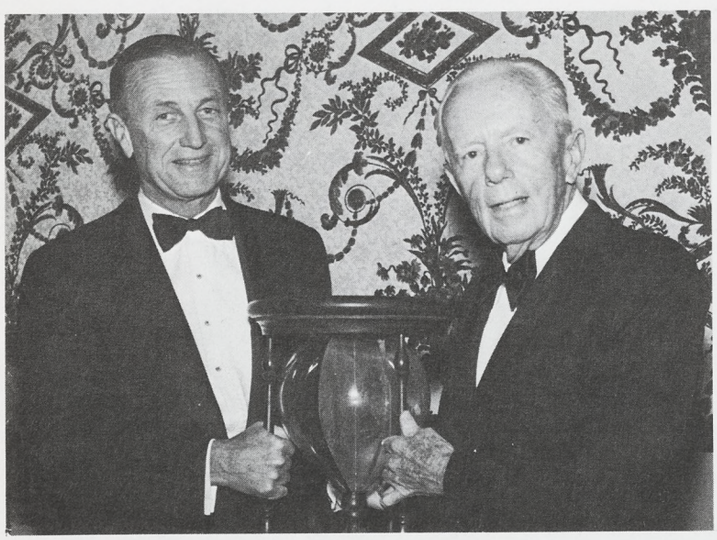
People who postpone retirement beyond age 65 will get a bonus starting in 1974. Their benefits will be raised one per cent for each year they work after 65; cut off at age 72.

The amount you can earn in retirement without losing social security benefits is increased. Present law lets you earn $1,680 per year and still collect full benefits; above that, you lose $1 for each $2 you earn up to $2,880, and $1 for each $1 you earn above $2,880. Starting in 1973 you'll be able to earn $2,100 a year without losing anything. After that, you'll forfeit $1 for each $2 of your earnings.

Widows (and dependent widowers) will be entitled to full benefits instead of having them reduced. A widow now gets 82½ per cent of what her husband would have received had he lived, starting at age 62. Hereafter she'll get 100 per cent, though she'll have to wait till she's 65 for that amount.

Benefit Adjustment

Benefits will be adjusted automatically each year beginning in 1975, to keep them in line with the cost of living. Generally, when there is an increase of three per cent or more in the government's Consumer Price Index, benefits will be raised by the same percentage. And when benefits go up, the amount of earnings on which you pay taxes will be increased to keep it in line with the general wage level. Over the years, this means benefits will be much higher than they are today. But taxes will go way up, too.



JOHN K. NORTHROP, co-founder of Northrop Corporation, was one of four recipients of the 1972 Kitty Hawk Memorial Awards at the 10th Annual Wright Brothers Memorial banquet held in December. Here Thomas V. Jones, Northrop president, who was honorary chairman of the banquet, congratulates Mr. Northrop on receiving his hourglass "Sands of Time" award. Mr. Northrop was selected to receive the award "for his pioneering contributions to the nation's advancements in flight." Other recipients were Donald W. Douglas, Captain Elgen M. Long, Flying Tiger Lines, and U.S. Army Chief Warrant Officer Lester M. Whiteis, Jr., who was cited for his participation in the development and employment of a helicopter-launched missile system. The dinner was sponsored by the aerospace committee of the Los Angeles Chamber of Commerce.

APOLLO ROUNDUP

The February issue of the Northrop News will carry a roundup of Northrop contributions to the Apollo program. Watch for it!

COURSES OFFERED

Two El Camino College credit courses will be available to Northrop personnel beginning Feb. 5 through June 4.

The courses are Oral Communications Techniques to be held on Mondays and Developing Supervisory Leadership on Thursdays from 5 to 8 p.m. Each class offers three units of credit.

Ralph Carey, coordinator, Training and Community Relations, will instruct both classes in the Plant Two Training building, Hawthorne.

Registration is continuing through Jan. 28. Call or see Norma Conrad, ext. 5167.

NRC RECOMMENDS seeing lovely costumed Japanese dancers present classic dances during daily performances at the Japanese Village and Deer Park in Buena Park. Northrop personnel may obtain a 10 per cent discount on admission tickets by obtaining a "Studio Club" membership card at Personnel Activities.

Credit Union Declares 6¼% Dividend Rate

The Northrop Credit Union headquartered at Northrop Hawthorne, set a semi-annual dividend at the December meeting of its board of directors, according to Credit Union President R. A. Lindsey.

The dividend is at the annual rate of 6¼ per cent and was paid to shareholders of record (Nov. 30, 1972) on Jan. 1, 1973. The amount of $300,200 was distributed to approximately 9,300 shareholders. The increased rate is due to member utilization of lower cost loans offered by Credit Union services.

Mr. Lindsey said that changes updating operational procedures to give better service has also resulted in lower operating expense. One of the major changes which will be apparent to members is the method of reporting earnings on savings to the Internal Revenue Service. Members will be informed of amounts reported on their regular quarterly statements. Statements received this month will include earnings for 1972 and should be retained for tax records.

IS IT NEWS?
CALL EXT. 4273
HAWTHORNE

Waldschmitt, Kaufman Get New Positions at Page

Joseph A. Waldschmitt has assumed the position of chairman of the board of Page Communications Engineers, Inc., and Irving Kaufman has become chief executive officer and president, according to Thomas V. Jones, Northrop president.

"This management realignment gives Page an over-all increased management capability and will benefit all of the company's operations," said Mr. Jones. "It adds greatly to the leadership structure of Page by bringing the extensive management and business experience of Mr. Kaufman to bear on the direction of the company, while continuing to utilize the knowledge and background of Mr. Waldschmitt in ensuring the future growth and success of Page," Mr. Jones added.

Clinical Laboratory Data System Now Operational

A customized business data management system produced by Northrop Berkeley Scientific Laboratories, Inc., expressly for the clinical laboratory has been installed and declared fully operational in the facilities of Diversified Medical Laboratories (DML), Van Nuys.

The Series 2000, an on-line, real-time business data system, automates all paperwork associated with patient billing, insurance forms processing, accounts receivable, daily records and financial and management summary reports, according to A.T. Migliori, manager of BSL Business Data Systems Division in Torrance.

"The basic system is compact and consists of a mini-computer, disc drive memory, printer, and TV data terminal," Mr. Migliori states, "and is easily installed in the customer's facilities. The Series 2000 is a turnkey system which can be operated by existing DML personnel without special training, and is dedicated to the lab's business requirements. BSL also provides a total systems maintenance package which features immediate service when required."

Berkeley Scientific Laboratories is a wholly owned subsidiary of Northrop. In addition to business data systems produced by the Torrance facility for medical and other specialized business applications, BSL also offers medical data systems for use by clinical laboratories through its Medical Data Systems Division in Hayward, Calif.

MEETING SET

The annual meeting of the shareholders of the Northrop Credit Union will be held in the Aircraft Division cafeteria, Plant One, on Tuesday, Feb. 6, at 5 p.m., for the purpose of electing directors, credit committee and supervisory committee members, and for transacting other business.

ONE OF THE LARGEST single span structures in the region is this massive Mehrabad hangar, part of a new industrial site nearing completion at Mehrabad Airport, Iran. The main hangar is the outstanding feature of the new Iran Air Craft Industries (IACI) facilities. It is capable of housing all types of aircraft including jumbo jets and supersonic airliners. It features three work lines for maintenance, repair and overhaul of engines and airframes. Robert Rolfe, left, IACI managing director, discusses hangar construction with President Thomas V. Jones, and Derek Jonson, technical director. IACI is a joint venture between the Iranian Government, the Industrial and Mining Development Bank of Iran and Northrop.

COOPER UNION to be renovated by George A. Fuller Company.

A CHALLENGE —

Renovate the Building; Retain Its Character

A New York City landmark, Cooper Union Foundation Building, where Abraham Lincoln delivered his famous "Right Makes Might" speech on Feb. 27, 1860, beginning his eastern drive for the Presidency, is to be completely renovated by Northrop's George A. Fuller Company.

The colonnaded eight-story brown sandstone building has been a private tuition-free college since the days of gaslights, cobblestone streets and horse-drawn trolley cars.

Its basement "Great Hall," so named because it was New York's largest auditorium in the mid-19th century, has served as a forum for Mark Twain, Henry Ward Beecher, Susan B. Anthony, and Presidents Ulysses S. Grant, Grover Cleveland, Theodore Roosevelt, Woodrow Wilson and William Howard Taft.

The two-year $15 million interior renovation will wholly retain the building's character, and improve lighting, seating and work areas.

Exterior changes will be minimal, as the Italian style building was declared a national landmark in 1962.

WINCON COMING

"Emerging Business Opportunities Through New Technologies" will be the theme for the Institute of Electrical and Electronics Engineers (IEEE) 1973 Winter Convention (WINCON) to be held Feb. 13-15 at the International Hotel in Los Angeles.

D.N. Ferguson, corporate vice president and general manager of the Electronics Division is serving on the advisory committee for the convention.

IEEE will have the cooperation of Chamber of Commerce agencies in the program emphasizing new business potentials in various areas of commerce and industry.

Half-day sessions will feature specialists speaking on new technology applications and future requirements in such fields as transportation, environmental management, medical and health services, education and law enforcement.

Oklahoma, USAF Laud NWASI Unit

A rare 'double' was chalked up recently by the Vance (Oklahoma) Division of Northrop Worldwide Aircraft Services in winning two prestigious awards.

Last month, the State of Oklahoma named the division as "Employer of the Year" in that state. Formal presentation of the award will be made this summer in Oklahoma City.

The NWASI division, which is performing contract aircraft maintenance at Vance AFB, was notified earlier in the year that it had shared in the Air Force Outstanding Unit Award (AFOUA) won by the 3575th Air Base Group. The award covered the period from Jan. 1, 1971 to March 15, 1972. NWASI personnel on the job during this period are eligible to wear AFOUA lapel pins.

In citing the Vance Division for its achievement, Lt. Colonel Robert J. Lines, commander of the 3575th Air Base Group, said, "I have been truly impressed by the high standards of performance set and maintained by the employees of Northrop Worldwide Aircraft Services, Inc."

Reading Books Is Not a Lost Art to Helen Phillips

Even bookworms tip their hats to the Electro-Mechanical Division's Helen Phillips. She is surely the champion reader of them all.

In a time when reading has become a lost art, replaced by the electronic shadows of TV, Mrs. Phillips reads from 100 to 150 books a year. She spends from a day to four days on each book, "depending," she added, "on whether it is an idiot book or a serious one."

Since Aug. 8, 1972 to Nov. 1, when this was written, her reading log showed 38 books. "But I'm slowing up a little now," she said. "I'm now taking long walks at noon instead of reading."

Books and Helen Phillips have had a lifelong love affair. She can't remember when she first started reading, but by the time she was in the third grade she had gone through the entire children's section at the Buena Park library. She then started on the adult section, carrying books out by the armloads.

"Once the librarian asked me skeptically, 'Helen, are you sure you're reading all those books?' " she said. "I was reading them — every word. I read fast, but I never skip about."

There was one year during the 1950's when serious eye trouble kept her from reading. "I almost went crazy," she recalled. "I was so desperate I had my little daughter reading me her kindergarten books."

Looking back over her lifetime of reading, she picks "Elsie Dinsmore," and "The Secret Garden," as the best remembered books of her childhood. For her adult life she picks "Endurance," a story of the Shackleford Arctic Expedition as her favorite.

She is not now as big a patron of the library as she once was. The pleasure of reading library books is offset by the pain of having to take them back. So she buys most of her books now, or obtains them from her friends.

The den in her home has one wall covered with bookcases. Then they overflow into boxes in the garage, "and even into boxes stuffed under the bed."

She now has 2,000 books in her library. At her present rate of reading an average of three books a week, this represents over 12½ years of reading.

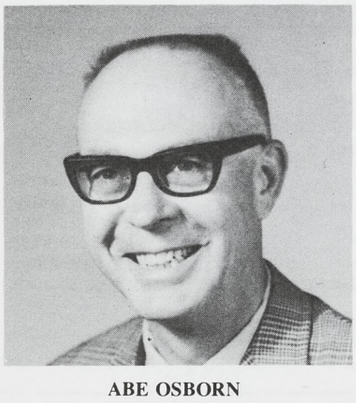
Abe Osborn is One of a Kind

Abe Osborn, reliability project engineer, BRN-7 Omega Navigation Set, has recently established himself as being one of a kind in the Electronics Division.

In January 1972, Mr. Osborn was awarded the "Reliability Engineer Certificate" by the American Society for Quality Control (ASQC). Then, after completing formal courses in quality control and management at UCLA, and after successfully passing a comprehensive ASQC examination on the technical and managerial aspects of Quality Control, he was awarded the ASQC "Quality Engineer Certificate" in June 1972.

What makes Mr. Osborn one of a kind in the division is that he is the only man to be both a Certified Reliability Engineer and a Certified Quality Engineer.

Mr. Osborn has over 10 years experience in Quality Control and is a senior member of the ASQC. He holds an EE degree from Northeastern University, Boston, and is a registered professional engineer in Massachusetts. He has been in Electronics Division Reliability for over six years, and previously held the same position at the Ventura Division.



ABE OSBORN

PROSPECTOR'S CLUB DAY SET FOR JAN. 27

Knott's Berry Farm in Buena Park, has scheduled a Prospector's Club Day for Saturday, Jan. 27 for all employees.

While visiting Knott's, Prospector's Club members can listen to bands playing, watch parades and see live entertainment in the John Wayne Theatre and Wagon Camp.

Also offered is a Prospector's Club special from 10 a.m. to noon, which includes unlimited use of rides and attractions in Knott's entertainment area when you purchase a PAC-O-FUN ticket book.

NEW CITIZENS OF THE United States are Jes Manlagnit, left, and Keith Marshall, center. Extending congratulations is Harold Beadle, manager, Industrial Engineering, Aircraft Division. Mr. Manlagnit is from Manila in the Republic of the Philippines, and has been in this country six years. Mr. Marshall is from Lowestoft, England, and came to Northrop five years ago.

Rotarian on Six-Week Goodwill Visit to India

Jack Jones, management systems analyst for Management Services, Aircraft Division, has been chosen by Rotary International to visit India with five other business and professional people. His visit is sponsored by the Rotary Foundation Group Study Exchange Program and is intended to promote goodwill and improve understanding among the nations of the world.

Mr. Jones, a Rotarian of District 528, was chosen team leader of the group, and will represent that district during their six-week stay in India.

The exchange is an educational activity that gives these men the opportunity to study India, its people, and institutions. It is also a function to allow men of goodwill to meet, talk and live with each other in fellowship.

While in India, the team will visit the parliament, other governmental agencies, and attend a private audience with Prime Minister Gandhi. They will also visit Rotary District 315 in Southeast India, each of the 32 Rotary clubs in the district, and selected cultural, religious and historic sites.

Mr. Jones said, "It will be a rewarding experience to represent my country, Rotary District, and Northrop, as their ambassador to India. It is our feeling that the uninhibited exchange of ideas and experiences, exposure to their cultures, customs, life styles and religions, while guests in their homes, will greatly enhance the two countries' understanding and empathy for one another."

The India exchange team recently returned to their home after spending eight weeks in District 528 and visiting its local clubs.

COVERT LEAVES FOR MISSION IN FINLAND

Jack Covert, an auditor in Accounts Payable since June 1972, left his employ with the Aircraft Division on Jan. 4 to make preparations for an extensive and rewarding mission to Finland.

Jack will be spending 22 months in Finland working with many Finish Missions. Jack, who is a member of the Church of Jesus Christ of Latter Day Saints (Mormon), left Jan. 6 for Salt Lake City, Utah, then to Ricks College in Rexburg, Idaho, for two months of language training.

Jack Covert

He will then travel to Finland's Mission headquarters in Helsinki, and from there he will be travelling throughout Finland doing voluntary work at different missions. His mission is being financed by the church and his parents.

Jack is the son of Bill Covert, a contracts administrator for the Aircraft Division.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Automobiles For Sale

Dodge, 1968 Polara, a/c, p/s, p/b, auto. trans., 74,000 mi., bids close Jan. 19, min. bid $800. Credit Union, ext. 1117.

Continental, 1964, a/c, full power, 4-dr., $550. 213-882-0761.

Volvo, 1971 145S wagon, auto., a/c, $2,995. 213-371-4917.

VW Camper, 1968, pop-top, a/c, AM/FM radio, burglar alarm, tach. & vac. gauges, tent equip., $2,700. 213-375-2091.

Volkswagen, 1971 AM/FM radio, htr., headers & glass pack, 1600 cc eng., 18,000 mi., $1,650. 213-374-7055.

Pontiac GTO, 1967, a/c, 8-track tape, Michlen radial tires, d/brakes, $1,100. 213-377-6658.

Javelin, 1968 S.S.T., a/c, p/s, $1,375. 213-325-7566.

Datsun, 1971 240Z, a/c, 25,500 mi., $3,800. 213-373-5405, 213-378-8798.

MGA, 1958, $450. 213-973-1583.

Karmann Ghia, 1961, r/h, 85,000 mi., $340. 714-530-3708.

Pickup, 1971 Toyota, 25,000 mi., $1,800. 213-545-4811.

Dune Buggy, Mini-T, $400. 213-329-1664.

Karmann Ghia, 1959, new tires, radio, $400. 213-675-2590.

Chevelle, 1969 SS, a/c, auto. trans., new eng., $2,400. 714-551-3844.

MGB, 1966 Roadster, wire whls., r/h, top, tonneau, $770. 213-378-4352.

Chevrolet, 1960 Impala, V-8, 4-dr., all power, $300. 213-285-2582.

Pinto, 1971 Runabout, auto. trans., 2000 cc eng., $1,695. 213-632-8606.

Ford, 1971 Pinto dlx. sedan, 4-spd., r/h, $1,450. 213-835-0763.

Corvette, 1968 h/top convt., V-8, 350 h.p., 4-spd., pwr. d/brakes, AM/FM, new eng. & tires, $2,600. 805-492-2642.

Jaguar, 1964 XKE Roadster, $1,300. 213-530-0379.

Mercedes Benz, 1966 230S, Sunroof, AM/FM radio, p/s, p/b, 4-spd., $2,100. 213-670-5486.

Station Wagon, 1964 Ford, 4-dr., $400. 213-644-4657.

Volkswagen, 1969 Square Back, $1,250. 213-894-1381.

Chrysler, 1965, 4-dr. h/top, a/c, full power, $450. 213-377-8547.

Buick, 1967, Skylark convt., fact. air, full pwr., AM/FM, 50,000 mi., $775. 213-433-5577.

Mustang, 1969, Fastback, 390 eng., 4-spd., $1,900. 213-423-1363.

Ford, 1967, Custom 500, 2-dr., a/c, p/s, r/h, $800. 213-675-2331.

Chevrolet, 1964 Malibu SS, 327 Fl hds., bluprnt eng., Holly, Hurst, TRW, $700. 213-324-5719.

Mercury, 1967, Cougar, p/b, p/s, a/c, AM/FM radio, tape deck, 42,000 mi., $1,500. 213-323-0944.

Ford, 1964 Fairlane 500, V-8, auto., r/h, 71,000 mi., $275. 213-835-2328.

Miscellaneous For Sale

Drum Set, 5 pcs. incl. cymbals, $100. 213-377-2544.

Bed, Colonial style, mattress, box spring & frame, $75. 213-530-3666.

Trike, 1947 '45 Harley Davidson, $1,100. 213-542-0012.

Tires, 4 8:25x15 w/w, $15. 213-675-8007.

Tonneau Cover, 1965 MG, & frame, $7. 213-676-1580.

Drum Set, Ludwig Super Classic, cymbals, stands, hi.-hat, & chrome snare drum, $395. 213-398-0377.

Receiver, Sansui 5000A, 180 w., $280. 213-322-1484.

Freezer, Kelvinator, 20 cu. ft., $100. 213-378-9660.

Motorcycle, 1972 Kawasaki G5 100 cc, under warranty, $335. 213-329-2556.

Motorcycle, 1971 Honda Mini-Trail 50, off road license, $165. 213-675-5583.

Bob Sled, room for 3 adults, $10. 213-378-2609.

Ironer, Ironrite, auto., $25. 213-373-2365.

Adding Machine, Remington, 10-Key, $55. 213-370-3821.

Drum Set, Ludwig, 2 yrs. old, complete, $600. 213-862-4406.

Supercharger, Judson, for VW 1300, $60. 213-375-8536.

Transmitter, 100 w. 2-meter, rack-mounted, amateur-type, $45. 213-545-7149.

Miscellaneous For Sale

Sailboat, 19' Westwind, fiberglass, 4 h.p. motor, trailer, extras, $1,200. 213-371-3781.

TV console, RCA, 21'' b&w UHF, $50. 213-676-6352.

Kitchen Stove, $27. 213-939-8053.

Desk, student's, white antique, $10. 213-532-1344.

Wheels, Ford, 5-hole, never used, $5. 213-784-0533.

Motorcycle, 1967 Hodaka Ace, 100 cc, dirt, $150. 213-372-1825.

Dog House, for lge. dog, $35. 213-360-0386.

Washer & dryer, gas, Kenmore, $100. 213-374-4703.

Motorcycle, 1964 Yamaha 80, dirt, $80. 714-532-1510.

Bumper, front, K-Ghia, all models through 1971, $25. 213-329-2893.

Pups, ¾ Labrador, born New Year's Day, $15. 213-370-4643.

Accordion, Contello 120 bass, w/case, $70. 213-374-8645.

Stereo Equipment, Sansui SP5000, tuner amp. 180 w., 8-track cart. play-record deck, other access., $560 or sell sep. 213-679-7730.

Golf Set, boy's beginners, 3 irons, wood, putter, bag, $15. 213-374-4230.

Vacuum Cleaner, Eureka, all attachs., $35. 213-679-5668.

Storage Building, metal, 10' x 7', still in orig. carton, $85. 213-635-3619.

Amplifier, Dynaco SCA 80, FM5 tuner, dual turntable, $300. 213-329-4128.

Motorcycle, Hodaka Super Rat, 100 cc, $335. 213-378-2790.

Tent Trailer, 1966 Apache, sleeps 6, bltin dinette, stove, awning, other extras, $500. 213-860-3793.

Camera, 35mm Minolta SRT. 101, 1.4 lens, case, sun shade, $165. 213-672-2370.

Pup, Irish Setter, w/papers, 3 mos. old, $120. 213-378-0463.

Transmission, auto., fits Falcon or Comet, $35. 213-328-3306.

C. B. Radio, Johnson 323, 23-channel, narrow band filters, base or mobile, $190. 213-377-5059.

TV, b/w 20'' console, walnut cabinet, remote control, $75. 213-676-3050.

Bicycle, girl's Schwinn Breeze, w/auto bike carrier, $50. 213-645-9253.

Dune Buggy Parts, $75. 213-821-9110.

Dining Room Table, 6 chairs, w/pads, $25. 213-322-2364.

Bicycle, Sting Ray, 20'' whls., convt. to boy's or girl's, $20. 213-360-0604.

Baby Items, $40 or sell sep. 213-547-4063.

Motorcycle, 1970 Triumph 650, TR-6, 5,000 mi., $1,200. 213-373-3287.

Vibrator, Niagara cyclo-massage, heat & spd. control, $50. 213-679-5678.

Crib, Edison w/mattress, $20. 213-541-3280.

Washing Machine, Maytag, approx. 8 yrs. old, white, $75. 213-324-3038.

Motorcycle, 1971 Honda 175, 2,500 mi., $350. 805-492-3782.

Trailer, 20' Kencraft, completely self-contained, many extras, $2,700. 213-323-4329.

Tire Chains, fit 700x14 to 810x15 tires, never used, $7. 213-575-7938.

Washer, Maytag, w/load & action controls, $65. 213-679-6672.

Trailer, 10' x 55', comp. furn., awning, skirts & storage shed, adult pk., $2,500. 213-375-0017.

Bedroom Set, 9-drwr. dresser, bed, dble., $100. 213-644-0889.

Washer, Kenmore, $50. 213-379-2980.

Sofa, 8½' long, 2-pc. contemporary, $100. 213-645-7972.

Hide-A-Bed, black naugahyde, black & white Herculon back, reverse cushions, $85. 213-675-3957.

Wanted to Buy

Skis, w/Nevada Grand Prix bindings, used. 213-679-0048.

Piano, good condition, preferably baby grand. 213-641-8355.

Guitar, classical, 6-string, good quality. 714-897-2007.

Toolbox, Roll-a-Way, prefer old Sears 9 drwr. type. 213-374-2915.

Trade

TV picture tube, 16'' b&w, trade for 3 books of Blue Chip stamps. 213-597-5232.

Free (To Be Given Away)

Pup, mixed Lab., doxie & cocker, black female, 4 mos. old. 213-375-7978.

Personals

Thank you sincerely for sharing our sorrow, your kindness is deeply appreciated. DENNIS LEE.

We wish to thank our many Northrop friends for their contributions to the Cancer Society in memory of Vivian Osborn. THE OSBORN FAMILY.

JOSEPH L. HAMPTON, a hand router operator for the Aircraft Division, has been awarded membership into the Wise Owl Club of America. Membership is awarded to employees and students whose eyesight has been saved by wearing eye protection at the time of a potentially blinding accident. Mr. Hampton had been examining his router as it seemed to be jammed, and when he turned it on, the setback jumped off the router head and hit his left eye, shattering his safety glasses. Left of Mr. Hampton is Les Strong, manager of Night Operations, and on the right, Ray Shepherd, general foreman. The Wise Owl Club is sponsored by the National Society for the Prevention of Blindness.

MODEL AIRPLANE Club Commissioner Earle L'Homme shows his radio controlled replica of a World War I Italian Scout Ansaldo SVA-5. Many members of the club build and fly such unusual planes. New members are welcome.

D. R. Apodaca to Teach Two Classes

Two 12-week courses in Metallurgy will be instructed by D. R. Apodaca, Material Engineering, at the Southern California Gas Company, 810 So. Flower St., beginning Feb. 12.

The classes, Metallurgy of Stainless Steels, and Metallurgy of Titanium, will be held from 7 to 9:30 p.m., and the fee for each course is $45. Anyone who wishes to attend, contact Mr. Apodaca, ext. 1816.

CAMPERS HEADING SOUTH JAN. 26-28

The Northrop Wanderers, Northrop's Camping Club, will hold their next campout the weekend of Jan. 26-28 at O'Neill Park, in Trabuco Canyon, Orange County.

A potluck dinner for all will be at 5 p.m. on Saturday, Jan. 27, according to Commissioners Frank McGinley, Electronics Division and John Homberg, Aircraft Division.

Personals

Ride Wanted, 7 a.m. to 3:42 p.m., Edinger & Bushard, Fountain Valley, Calif. Aircraft ext. 4731, 714-839-0442.

Riders Wanted, 7 a.m. to 3:42 p.m., Huntington Beach, Aircraft ext. 2905, 714-531-8845.

We wish to extend our appreciation for the help & comfort extended by Fred's many friends at Northrop on his passing. THE SARSAR FAMILY.

My sincere thanks & appreciation to all my Northrop friends & co-workers for the flowers & expressions of sympathy on the passing away of my father. SKIP MARSTON.

NORTHROP NEWS

Vol. 31 **No. 1**

Published monthly by Northrop Corporation Employee Communications.

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Editor—Electro-Mechanical Division ..... **Ivy Edmonds**
Editor—Ventura Division ..... **Park Irvine**
Editor—Aircraft, Electronics Divisions ..... **James Lassiter**
Correspondent—Architectural Systems ..... **Dale Albee**
Correspondent—Precision Products Department ..... **Peter Goodall**

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MAKING PLANS for the new year are the members of the 1973 Northrop Recreation Club Executive Council. From left, Tony Amundson, treasurer; Ed Sterbenz, president; Frank McGinley, vice-president; Dorothy Baldwin, past president; Dick Reamer, sergeant-at-arms; and Glennie Leeches, secretary (not shown).

Service Awards Presented To 18 Division Employees

With the beginning of the new year, 18 Electronics Division employees have qualified for, or recently received five, 10, 15, 20 or 25-year Northrop service awards.

Topping the list of recipients is the 25-year man, Elwood Parrick of Environmental Structural Dynamics at the Hawthorne facility.

Mr. Parrick began his career with the company in 1947 in the Hydraulics unit, but has been with Structural Design for the last 12 years.

Other service award recipients are:

Palos Verdes

Twenty years: Mary Gillis, Manufacturing Tool Control; and John Schindler, Strategic Missile Space Systems.

Ten years: Donald Moss, JIFDATS Applications.

Five years: Patricia Kean and Joreen Hodge, both of Accounts Payable and Travel.

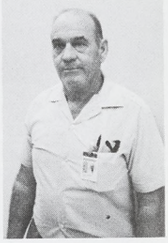
New Jersey

Five years: Bramwell Dean.

Hawthorne

Fifteen years: William W. Smith, Program Development.

Ten years: Queen Jenkins and Robert Davies, both of Manufacturing Process; Seth Lewis, Reliability Engineering; and David Steybe, Systems Analysis.



Mr. Parrick

Five years: Roy Herzog, Subsystem Test and Repair; Clearen Ockerman, Shipping; Phillip Engels Jr., Facility Engineering; Nancy Clary, Material Accounting; Harry Redgrift, Hybrid Circuit Lab; and Margaret Tammany, Contracts.

Electronics Team Will Service Omega For Navy P-3C Aircraft

A System Integration and Field Service team has been established for the U.S. Navy P-3C aircraft Omega program, according to Lloyd Jones, deputy director, Product Support subsection, Electronics Division.

Initial assignments are Don Smith and George Moser, who will work closely with Lockheed, the airframe manufacturer, and other subcontractors to develop maintenance plans, test procedures and equipment requirements.

The team will be responsible for service of Northrop manufactured Omega equipment in the field, and for liaison with other contractors and the customer.

Warren Weimer is the project engineer and Vic Moore is program manager.

DOEHLER ELECTED FELLOW OF IEEE

Dr. Oskar F. Doehler, scientist at Warnecke Electron Tubes, Inc., an affiliate of Northrop, has been elected a Fellow by the board of directors of the Institute of Electrical and Electronics Engineers.

This honor is reserved for individuals who have shown outstanding and extraordinary qualifications and experience in the field of electrical and electronics engineering.

Dr. Doehler has achieved this distinction for contributions and technical leadership in the field of high-power microwave tubes, and especially crossed-field devises.

Commenting on the award, David N. Ferguson, general manager of the Electronics Division, said, "This award is as satisfying to me as I am sure it is to Dr. Doehler, for it stands as an example of the many capabilities possessed by our people in the Electronics Division."

IS IT NEWS?
CALL EXT. 4273
HAWTHORNE

NRC TO FEATURE LEATHERCRAFT CLUB

The Northrop Recreation Club, Electronics Division, in continuing its objectives to provide services and recreational opportunities for employees, is promoting a new activity—the Leathercraft Club.

If sufficient interest is shown by those who wish to learn about this interesting hobby, NRC will arrange for a qualified instructor to teach the basics of leathercraft at a suitable time and day for those wishing to participate.

Anyone interested in the club? Then submit your name and organization number to Gail Wise, Personnel Activities, ext. 425, Hawthorne, and indicate which day of the week would be most suitable for you.

MR. MILLER

(Continued from page 1)

ment, Mr. Jones said, "I know that all concerned appreciate the importance of this organizational change to the continued success and growth of Northrop and that every support and assistance will be given to Mr. Miller as he assumes his new responsibilities."

NGFG—Supports AWACS Aircraft

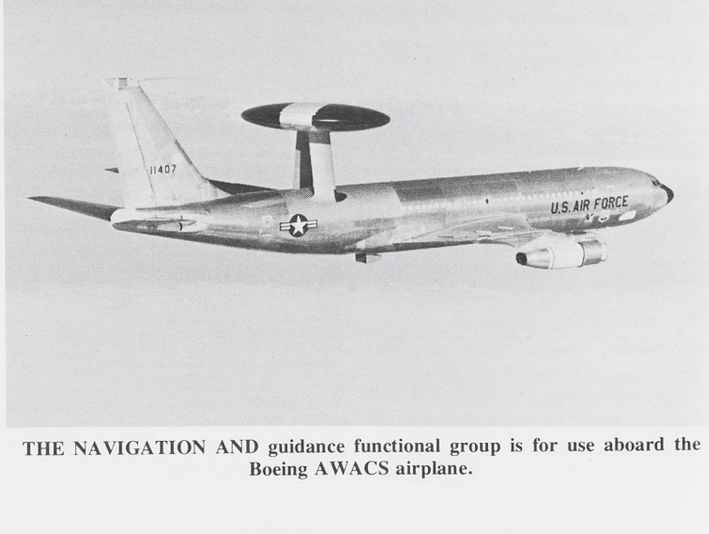
(Continued from page 1)

of the systems in the Northrop computer, using a 26 element Kalman filter, results in reference and control data considerably more precise than can be obtained from any individual system alone.

The NGFG can be divided into two elements: the controls and displays, and the functional systems. Data is provided to the operator, air vehicle functional groups, and to the On-Board Test Monitor and Maintenance Functional Groups to allow rapid determination of any equipment faults or degradation of performance, and allow restoration of full system performance through on-board maintenance of the failing system.

The prime navigation mode is Inertial-Doppler-Omega. In the event of failure of one or more navigation sensors, automatic mode selection is provided to allow degradation to the highest possible mode. The dual Inertial Navigation Equipment (INE) sets are capable of completely autonomous operation. Airborne alignment of the INE's is provided utilizing corrections generated from the Doppler and Omega sensors.

The NGFG also generates steering information for the AWACS autopilot and flight director system. Provisions are incorporated for control to nine waypoints as well as automatically generating the various holding patterns required for the AWACS mission.



THE NAVIGATION AND guidance functional group is for use aboard the Boeing AWACS airplane.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 31, No. 2 | February 1973

FROM LEFT TO RIGHT: Don McCallum, general manager of all Ferranti Ltd. in Scotland; Jim Drury, manager of Ferranti's Electronics Systems Division; A. B. Lipscomb, manager, Tactical Systems, Northrop Electronics Division, Hawthorne; Robbie Robertson, Ferranti North American representative; and Tom Anderson, Ferranti representative at Electronics Division, Hawthorne. Mr. McCallum and Mr. Drury were visiting from Scotland to discuss Northrop's on-going involvement in the Harrier Program and the mutual development of other potential business on the Harrier aircraft and related programs.

Berkeley Scientific Labs Wins $1.5 Million Contract

Los Angeles County/University of Southern California Medical Center has awarded Berkeley Scientific Laboratories a $1.5 million contract to equip its clinical laboratory with an automated data acquisition and control system. The award is believed to be the largest of its kind to date.

BSL, a subsidiary of Northrop, is the nation's largest supplier of clinical lab systems. The firm was selected by Los Angeles County officials for the contract after an in-depth, three-year study of the medical center's clinical laboratory requirements.

The contract, which represents a lease and maintenance agreement to span a five year period, calls for initial delivery to the nation's largest acute general hospital within six months, with the system becoming fully operational by next fall. The medical center will utilize BSL's CLINDATA™ 700 data acquisition system, which is specifically designed to meet the requirements of a large, metropolitan medical laboratory.

Revolving around a high-speed computer with disc memory, the BSL system incorporates on-line automated instruments, card readers, and specialized laboratory terminals, to eliminate a vast amount of paperwork and shorten laboratory turn-around time. As a result, according to BSL officials, the system offers improved patient care to the surrounding community.

JERRY D. HOWELL ELECTED VICE PRESIDENT OF NORTHROP DAKOTA

Jerry D. Howell has been elected vice president of Northrop Dakota, Inc., New Town, N.D., manufacturer of electronic circuitry and other assemblies for aircraft and electronic systems. Mr. Howell will continue in his capacity as plant manager.

"In appointing Mr. Howell to the position of vice president, we are especially pleased that the operation will continue to utilize his fine capabilities," said L. Kaufold, president of Northrop Dakota.

Mr. Howell attended Minot State College, majoring in business, and later continued his education in California.

Division Continues to Reorganize for Growth

As the Strategic Missile and Space Systems Department of the Electronics Division continues to grow, certain organization changes and personnel appointments have been made to ensure this continued development.

The following organizations and personnel appointments have been established: Operations section, G. R. Fritzel, director; and the Reentry Computer Tradeoff and Technologies (RCTOT) and Advanced Ballistic Re-entry Systems (ABRES) Program Office, and the Advanced Systems Program Office, Dr. W. L. Parker, program manager. The Business Development unit is discontinued and personnel are assigned to the Advanced Systems Program Office.

According to L. Kaufold, vice president and manager, Avionics Department, the following organization changes and personnel appointments were made to supplement the Avionics Department reorganization announced last December:

Program Management section, D.J. Avallon, director; Engineering section, G.W. Hauser, director; and the Program Development section, J.S. Parsons, director. These sections are part of the Navigation Department.

Tactical Avionics Department, for which A. B. Lipscomb, was appointed manager, has the following structure: Program Management section, L. Colombano, director; Engineering section, C. L. Bose, director; and the Program Development section, R. B. Whitman, director.

In the Special Projects Department, the following changes and

(See GROWTH, page 8)

NRC PLANS LAS VEGAS WEEKEND

The Northrop Recreation Club is featuring a Las Vegas weekend package, March 23-25, at the Desert Inn Hotel.

The cost is $37.50 per person which includes Greyhound bus transportation from the Electronics Division, Hawthorne; two nights' lodging at the hotel (double occupancy rooms); portage in and out of the hotel; tax and gratuities included; a fun book including free breakfast, brunch, bingo, casino chips, drinks, and more; and free refreshments en route to Vegas.

Reservations will be made only upon receipt of $20 deposit per person, and final payment is due March 9. Refunds will not be made after this date.

Departure time is 6:30 p.m., Friday, March 23, and return time is 2 p.m., Sunday, March 25. Reservations can be made through Gail Wise, ext. 426, Personnel Activities.

Service Awards For February

As of this month, 10 Electronics Division employees will have qualified for, or recently received five, 10, 20, 25 or 30-year Northrop service awards.

Ruth V. Harris, Illustrated Parts Breakdown, Spares, is the 30-year recipient of the group. She is an analyst with the Spares group in Palos Verdes.

Mrs. Harris began working with Northrop as a milling machine operator in 1943, and later became a Production Planner. Before becoming an analyst with IPB Spares she was with Air Frame Spares Breakdown.

Other service award recipients are:

Palos Verdes

Twenty years: John N. Foglio, Technical Support unit.

Ten Years: John R. Buck, Diagnostic and Safety Systems.

Five years: Ray E. Kela, Strategic Missile and Space Systems.

Hawthorne

Twenty-five years: Clay W. Enoch, Jr., engineering technical assistant.

Ten years: Wayne B. Logan and Paul P. Prelitz, Omega Systems Engineering.

Five years: Tom Kornegay, Cost Estimating; Fred R. Olgin, Business Systems; and David R. Hoppe, Operations section.

O'Melveny Retires From the Board—Succeeded by Bergen

Richard C. Bergen has been elected to the board of directors of Northrop, it has been announced by Thomas V. Jones, president and chairman.

Mr. Bergen was elected to fill a vacancy created by the retirement from the Northrop board of John O'Melveny. Mr. O'Melveny has served on the board for more than 30 years, having been first elected in 1942.

Mr. Bergen is a senior partner and chairman of the Management Committee of O'Melveny & Myers, Los Angeles law firm. He has been with the law firm since 1938, interrupted only by service as a U.S. naval officer in World War II.

A 1935 graduate of Northwestern University, Mr. Bergen received his law degree, cum laude, from Harvard Law School in 1938, where he was an editor of the Harvard Law Review.

He is a director of Security-Pacific National Bank, Santa Cruz Island Company, Drilling & Production Co., and E.B. Hall and Co.; and is an honorary director of the Red Shield Youth Center and of the Los Angeles Florence Crittenton Home.

J.H. Bruce Named Vice President-IR

J.H. Bruce has been appointed Corporate vice president, Industrial Relations, it has been announced by George F. Douglas, senior vice president, Administration.

In announcing Mr. Bruce's appointment, Mr. Douglas said that Frank R. Smith, Corporate director of Industrial Relations, will assume new duties as Labor Relations counsel for the corporation.

Mr. Bruce

Mr. Bruce joins Northrop from British Columbia Telephone Company, a General Telephone subsidiary, where he served for more than three years as vice president of Personnel and Industrial Relations. Prior to that he was manager of Organization and Management Development and assistant manager of Employment and Labor Relations for Del Monte Corporation.

Mr. Bruce has held a number of key management positions, including posts with Canada Packers Ltd., Del Monte Corporation in Canada and the U.S., as well as Ford Motor Company of Canada Ltd.

Gibney, Taylor Get Promotions

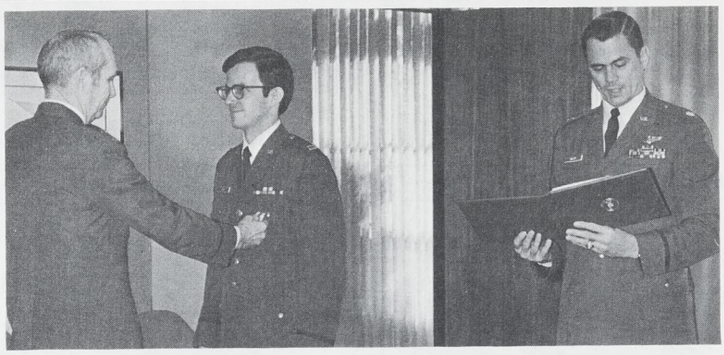
R. L. Gibney was elected president of Olson Laboratories, Inc., a Northrop subsidiary. Mr. Gibney was formerly vice president, Finance and Administration for the Electro-Mechanical Division, and has been an Olson director since 1971.

Donel Olson, former president of Olson Laboratories, will remain as a consultant to the company, devoting his efforts primarily to the exploration of new business opportunities.

Mr. Gibney was succeeded in the division by R.S. Taylor, who was elected vice president, Financial Management. Mr. Taylor began with Northrop in 1956 as a timekeeper at Ventura while attending UCLA where he graduated with honors.

He was EMD controller at the time of his election to vice president, Financial Management.

THE NEWLY OPENED Olson Laboratories Inc. plant in Livonia, Mich., is shown in this photo. Olson, a Northrop subsidiary, is one of the nation's leading vehicle inspection and emission testing companies. Olson also operates a similar test facility in Anaheim, Calif.



COLONEL G.G. NEAL, Air Force plant representative, left, presents the AF Commendation Medal to Capt. Dick Odle for his professional and technical competence, creativeness, and accomplishments as production officer at Wright-Patterson AFB, Ohio, from Sept. 25, 1969 to Aug. 1, 1972. Reading the citation is Maj. W.A. Wolff, deputy AF plant representative.

NADC to Design and Build Major Airport for Thailand

The Royal Thai Government and Northrop Airport Development Corporation (NADC) signed a contract in Bangkok for NADC to design and build a major, new $100 million international airport for Thailand by 1978.

Provisions of the contract call for the formation of a company to be known as Northrop Thailand Airport Company Limited (NTAC), in which Thai interests will hold the majority ownership. NTAC and the Thai Government are to execute a franchise agreement covering the operation of the airport for 20 years after it opens.

The airport is to begin operation in five years after NADC, under contract to the Thai company, completes the planning, design, engineering and construction of the new airport.

The $100 million to develop and build the airport will be obtained through a combination of equity funds invested in NTAC and loans to NTAC from both foreign and Thai sources. The loans will be repaid from revenue derived from the airport's operations over the life of the 20-year franchise.

The initial step of the airport project will involve completion of a master plan and preliminary design which will be undertaken by NADC under contract to NTAC.

Nearly three years of studies and negotiations between officials of the Thai Government and NADC preceded the signing of the contract by the Thai Ministry of Communications and NADC President Glenn R. Lord. NADC, a subsidiary of Northrop, is headquartered in Vienna, Va.

COLLINS APPOINTED

Ben F. Collins, program manager for Northrop operations in Saudi Arabia, has been appointed a vice president of the Aircraft Division, Welko E. Gasich, vice president and general manager, has announced.

Mr. Collins, who is headquartered in Dhahran, has been with Northrop for nine years. Prior to his assignment in Saudi Arabia, he served as program manager, Aeronautical Systems, of the Ventura Division.

NWASI Selects Anderson as a Vice President

Gaylord Anderson, Aircraft Division, has been selected by the board of directors of Northrop Worldwide Aircraft Services, Inc., as a vice president of that company.

Mr. Anderson

He will be located in Lawton, Okla., reporting to R.H. Madeira, president of NWASI.

D.J. Deering is appointed manager of Product Support, replacing Mr. Anderson, and reporting to Don Warner, vice president, Engineering, Aircraft Division.

Prior to Mr. Deering's most recent position as A-9 program manager, he was manager, Military Aircraft Engineering. He has also held key positions in program management and flight test.

Mr. Anderson has played a major role in developing the division's present posture for the marketing of aircraft support services. His appointment as an officer of NWASI places him in a position where he can enlarge upon this accomplishment.

Equal Opportunity Is Good Business

By Dave Davidson
Corporate Administrator
Equal Employment Opportunity

Northrop and its worldwide family of companies have selected as one of its priorities in the 1970's a continuing effort to achieve equal opportunities for all of its employees.

There are many dimensions to this commitment, and foremost is a management policy stressing the ethics and social responsibility of business in recognizing the dignity and rights of all of our employees.

Mr. Davidson

Putting this into practice has not been easy, and requires the constant attention of all of Northrop management.

The effects of a declining work force has been one of the barriers in increasing opportunities for black, white, red, brown, female, and male employees, but in spite of the deferral in several defense and space contracts, Northrop has been able to provide a process of including everyone and excluding no one from employment opportunities.

All of the divisions and subsidiaries of the company have developed Affirmative Action Programs designed to help equalize life's chances for minority groups — men and women, and in spite of layoffs and changing job requirements, progress is taking place.

While looking back may be a heartening experience, it is important that we look ahead and see how far we have yet to go to become a real equal opportunity employer. It is with the help of our minority employees and female employees that we hope to get referrals of other qualified minorities and women. This confidence in the company and the belief that Northrop is a good place to work will help us to cover the distance yet to be travelled.

One of the first steps in providing opportunities is education and training, and educational opportunities are encouraged through the Educational Refund Program. Northrop has gone beyond this by its participation in "The Consortium for Graduate Study in Business for Minority Students," a program in which five universities have joined to facilitate the entry of Blacks, Chicanos, Orientals, and Indians into MBA programs and then into management positions in industry. Also, Northrop has given support to a program for minorities in engineering at San Jose State University, and recently the Aircraft Division has joined in a cooperative program for minority and female students at Northrop Institute of Technology.

This concern for equal opportunity goes beyond just the opportunities in employment at Northrop. It includes a concern for the communities where our employees work and live, and is demonstrated in the company's support for many community organizations, such as the Urban League, the Mexican-American Opportunity Foundation, Operation SER, Interracial Council for Business Opportunity and many others. And this does not include the many hours our employees give to organizations dedicated to improving the quality of life in our communities.

The company has attempted to meet its obligation to its customer and to its employees and, while there are occasions when we become depressed because so much more must be done, we also realize that each step, regardless of how small, will help to finish a long journey.

Recently, at the 1972 Urban League Conference, Donald H. McGannon delivered the closing session speech with the following remarks,

"When society is in transition, as American society has been for a number of years, upsets and confusions sometimes obscure both direction and goals. It then becomes not only instructive but essential to halt and to take stock, to check our bearings, intentions and practices. For a glance backwards indicates that we have made some progress. Black Americans have changed America in profound ways that white Americans are only beginning to appreciate. But a glimpse into the future reveals that the road to equality in America is still tough and long, and all uphill."

APOLLO SLIDES

Personnel Activities, Aircraft Division, has 100 sets of 20 color slides available of Apollo 17 and its historic last flight to the moon for $3.50.

Also available are 40 color slides with tape cassette narration and music for $7.50, and 80 color slides with the complete story of Apollo 17 for $14.95.

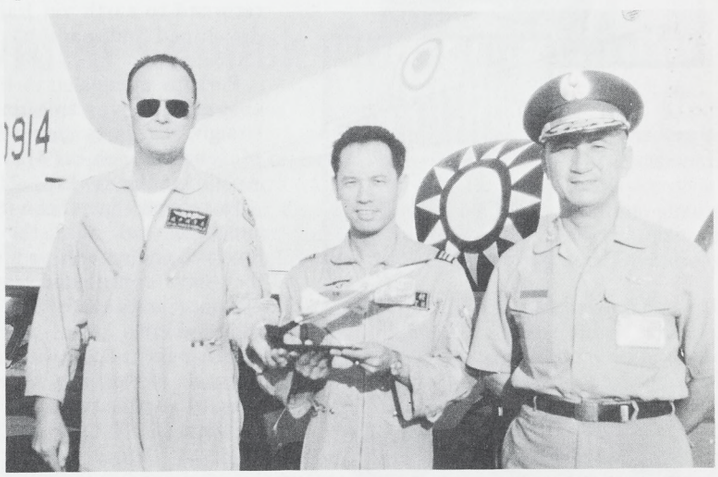
Another feature is "The Great Apollo Special," a group of color slides and a synchronized cassette tape recreating and reviewing the story of the whole Apollo program with the cooperation of NASA. Complete with the astronauts' voices, actual sound effects from the moon, and music, the special sells for $21.95.

Credit Union Has Successful Year, Directors Report

Shareholders attending the Feb. 6 annual meeting of the Northrop Credit Union, Hawthorne, heard officers and directors report a successful year of operation during 1972 in which total gross assets reached an all-time high of $11 million.

Reports revealed a 13.5 per cent growth increase due in great part to the improved economical conditions of the nation as well as Northrop. Savings on deposits continue to show steady growth and outstanding loans increased substantially over figures reported in previous years. Results were the increased dividend from 6 to 6¼ per cent during the last half of the year.

Elected as directors for the coming year were: Harvey Cook, L.L. Cripe, Mary Delaney, R.D. Hampton and J.J. Richardson of the Aircraft Division; R.A. Lindsey and J.S. Penrod, Electronics Division; B.M. Slotnick, Northrop Data Processing; and W.H. Waysman, assistant general counsel, Corporate office.



CHIEF OF AVIATION division, Lt. Col. Gerald McDonald and Military Assistance Advisory Group I-P instructor, left, presents a model of a T-38 to Lt. Col. T.H. Ning, a thousand and more hour F-5 pilot, upon his graduation as the first T-38 instructor pilot of the Chinese Air Force. Witnessing the ceremony is Major General Yung-chun Chi, commanding general of the First CAF Tactical Wing at Tainan.

CERTIFICATION IN PRODUCT ENGINEERING

Recently, the board of directors of the Society of Manufacturing Engineers (SME) approved a new area of certification called "Product Engineering for Manufacturing."

It will cover those people involved in design and development for new and existing products.

Northrop Aircraft Division is an affiliate member of the SME and the fee will be $35 for certification.

Applications may be obtained from John Hendel of Manufacturing R&D, ext. 1791, and Al Siggson of Design Standards, ext. 1822, Aircraft Division.

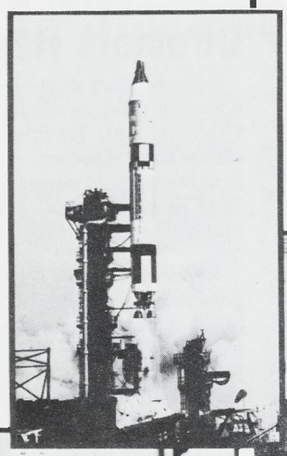
To help employees fill out certification applications and to answer questions, Richard C. Stankey, manager of SME Engineering Education, will be available Tuesday, March 13, 8 a.m. at the Manufacturing Engineering conference room.

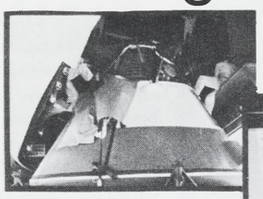
All interested employees are asked to contact C.K. Enoch, ext. 4821, to confirm reservations for attendance.

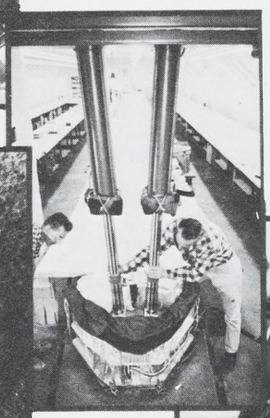
BUCKLE YOUR BODY DOWN

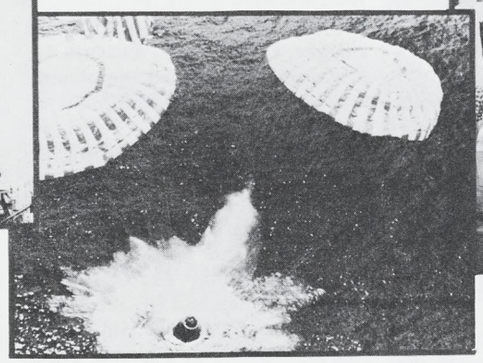
THE CALIFORNIA Highway Department hopes to enlist the aid of California children in its seat belt campaign which starts this month. The bumper sticker pictured here will be available to Northrop employees through Personnel Activities soon.

Northrop Helps Bring Home Astronauts









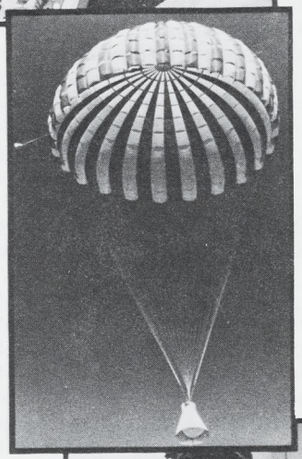
MERCURY TO APOLLO, A SUCCESS STORY

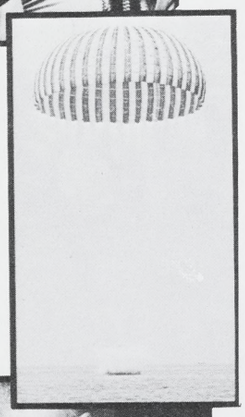
From man's first hesitating steps into space to the final Apollo 17 splashdown last December, all of America's astronauts have been safely returned to earth via Earth Landing Systems developed and made by Northrop's Ventura Division.

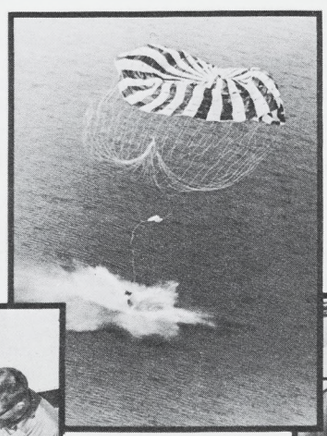
Perhaps unequaled in the history of manned space flight was this unbroken string of 27 straight successes dating from the first manned Mercury launch on May 5, 1961 to the final Apollo landing on Dec. 21, 1972.

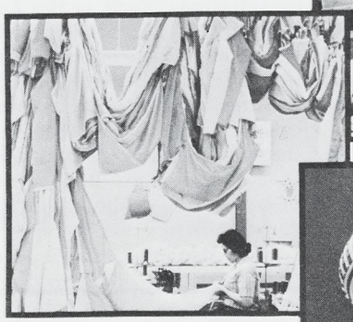
In between have been the years of dedication and hard work of all the Northrop employees involved and with that a lasting pride in knowing they have contributed towards the exploration of space and acquisition of knowledge of our solar system.

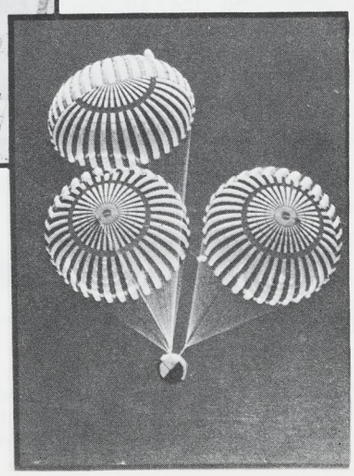
This page reflects the work, the triumphs and the pride of Northrop's Ventura Division in this country's space program.

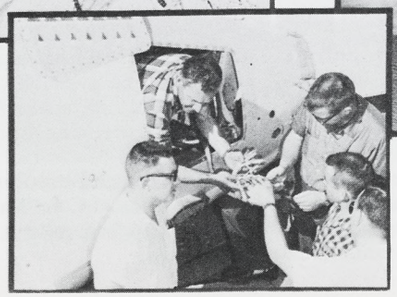


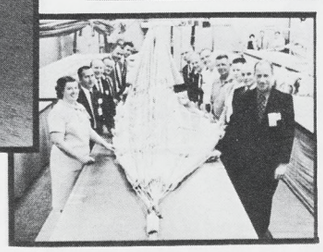












Apollo Missions Supported By the Electronics Division

Since 1967, Northrop's Electronics Division has made significant contributions to the Apollo missions.

The Marine Star Tracker (MST), developed in 1964, has supported every Apollo flight from 1967 to the last of the Apollo missions in 1972.

And Northrop-produced Vigicon systems were used in a number of previous Apollo shots and are now being used in other aerospace operations, as training displays and in many other military applications.

Corrects Errors

The MST acquires and tracks stars on demand, and provides output data which is used to correct latitude, longitude and heading errors of the ship's inertial navigation system (SINS).

Apollo tracking ships, using the MST, play a vital role in helping to place the spacecraft in its initial earth orbit.

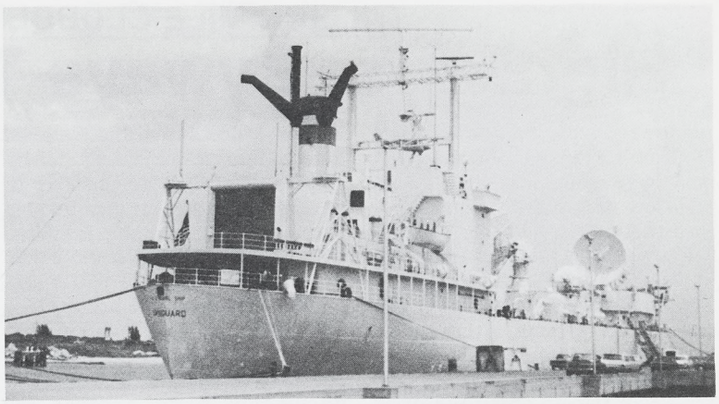
The Electronics Division performed the MST on-board installation under contract to the Air Force, builds spare parts, and provides engineering field service and maintenance training for star tracker technicians and maintenance personnel.

Real-Time Display

Vigicon is a multiple projector system which receives data from many sources and projects information onto a viewing screen, as the action occurs. This real-time display allows control center personnel to make timely decisions based on up-to-the minute pictures, which can be viewed in color.

Its building block design allows systems to be produced in many versions to meet special requirements. Display can range from larger theatre screens to small, individual viewing screens.

Vigicon systems consist of three major elements — data receiving, data processing, and data presentation. The highest order of clarity, accuracy, completeness, reliability and speed were vital functions in programming the Apollo flights.



THE U.S.N.S. VANGUARD, housing Northrop's Marine Star Tracker.

VIGICON display system for the NASA Manned Space Flight Center.

Northrop Services, Inc. Provided Launch Data for Apollo

Northrop Services, Inc.'s, real-time simulation team supported the Huntsville Operations Support Center at NASA's Manned Space Flight Center during the final Apollo mission.

Team members were Gladys Bell, Jim Easterling, Bernie Granger, Tom King, Joe Nichols, Mike Price, Jim Reaves, Wayne Revels and Bob Stewart.

The team manned two IBM-7094 computers to provide MSFC's In-flight Trajectory team with trajectory information to support navigation update and target update criteria and crew data pads for the booster system engineer and guidance officer at NASA's Houston Manned Spacecraft Center.

There were three general phases of the In-Flight Trajectory team's work. The first was the pre-launch phase which entailed answering "what-if" questions, simulating known platform errors, and checkout of trajectory programs for the launch phase.

The second launch phase, began with preliminary azimuth check with Manned Spacecraft Center, using the best estimate of launch time and continued through Translunar Injection.

During this phase, trajectories were calculated to reflect off-nominal launch time and performance, and any on-board software or hardware failures which are detected during real-time.

The Earth Parking Orbit was evaluated based on telemetered data and radar tracking data to determine if navigation update or target update was required.

Predicted fuel and oxidizer consumption was also determined. All information generated in this phase was evaluated, compiled and used to support the go/no-go decision for the second S-IVB burn into translunar orbit. Also, in the event of target update necessity, the team provided revised targeting data for MSC to transmit to the launch vehicle during real-time.

The third phase of the Northrop team's activity was reconstructing an accurate translunar burn using actual burn time and final propulsion data to provide the Lunar Impact Team with the best available Translunar Injection state vector.

"The Apollo 17 mission presented by far the most challenging timelines and real-time decisions of any of the Apollo missions supported by NSI's real-time simulation team," J.A. Barclay, manager of NSI's Southeastern Operations, said.

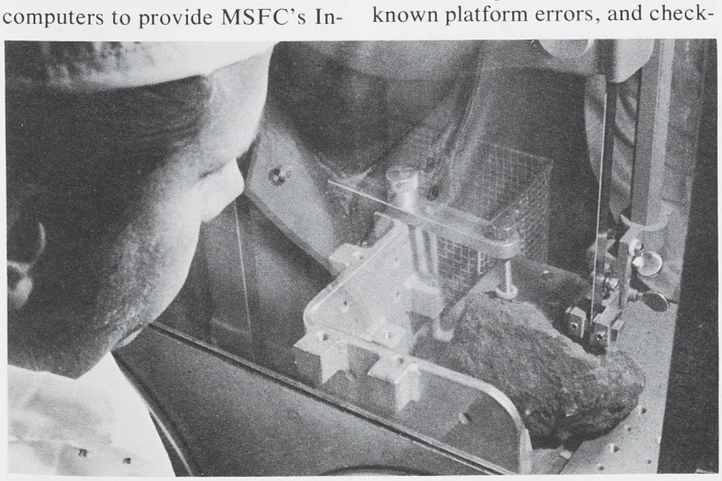
"For example, several delays in launch necessitated several azimuth updates along with regeneration of boost to parking orbit trajectories.

"Moreover, the uniqueness of an Atlantic Translunar Injection added the possibility of an earlier, or so-called 'zero', opportunity for the translunar burn. The 'zero' opportunity probability of target update necessity required twice the number of trajectories, and consequently the use of an additional computer simultaneously.

Severe Requirements

"The Apollo 17 mission real-time effort for NSI's team," Mr. Barclay added, "was conclusively the most successful yet. Although the requirements were the most severe of all the missions, the team showed poise and versatility in rapidly adapting to contingencies and meeting the timeline in all cases.

"All participants are to be commended for a great team effort in this highly successful NASA program."



A TECHNICIAN WITH Northrop Services, Inc., works with a moon rock brought back by Apollo astronauts. NSI, as part of its NASA support, operates the Space Environment Simulation Lab, Experimental Mechanics Lab, Crew Systems Laboratory, Thermochemical Test Area and Lunar Receiving Lab at NASA's Manned Spacecraft Center, Houston, Texas. Other Apollo support activity is conducted at NASA's Marshall Space Flight Center, Huntsville, Alabama, and at Goddard Space Flight Center, Greenbelt, Maryland.

MILLION MILE CLUBBERS

Highways, Byways Their Beat

Three drivers for the Aircraft Division's Transportation Department have accomplished a feat that very few people are capable of in their lifetime.

Each in their many years on the job has driven over a million miles on Southern California freeways and surface streets without ever having a preventable accident.

Perhaps the most significant aspect of these achievements is that a woman, Dorothea (Dot) Wood, was one of the drivers. For 27 years she has been driving as a courier for Northrop until she drove herself into the exclusive Million Mile Club of the National Safety Council.

Dot is the first woman ever to be admitted to lifetime membership in this club. Membership is limited to those who have driven more than a million miles or 25,000 hours without a preventable accident.

Driving a station wagon, she covers a 400-mile radius averaging 200 miles a day. She delivers mail, documents, parts, baggage and VIP's — all with the same degree of reliability. On weekends, she relaxes by taking pleasure drives.

She said, "The secrets to my successful driving record are: defensive driving, excellent vehicle maintenance and divine protection from all the male drivers on the road."

MILLION MILE CLUB members standing next to the vehicles they drive are, from left, Al Dye, Andy Anderson and Dot Wood.

Our two other million milers, who were also elected members of the Million Mile Club, are Harold 'Andy' Anderson, and Al Dye.

Andy, a panel truck driver for 22 years, spent 4½ years as a courier on the Ventura route. He averaged three round trips a day (about 320 miles). He said, "The route got to me after awhile — you know how those freeways are — the rush hour, rain, accident jams and crazy drivers."

Andy now runs a daily route delivering cards, tapes and printouts for Data Processing between the Engineering Center and Plant Two of the Aircraft Division.

Accident Free

Al Dye has been with Northrop for 23 years, and with Transportation for the last 22 years.

Currently a dispatcher, he previously spent most of these years driving a 40-foot semi-tractor-trailer, between Hawthorne and Palmdale and Edwards AFB. Al has hauled over 1,100 F-89's, T-38's, and F-5A and B's to and from these points with no accidents.

He also teaches driver training to new drivers in the department, and checks out the veteran drivers for any mistakes in their driving methods.

Fred Wolfe Retires as Food Service Manager

Fred E. Wolfe, manager of the Aircraft Division's cafeterias, dining rooms, and mobile food service operations, retired at the end of January after more than 26 years at his job.

Mr. Wolfe considered his job as being quite similar to owning and operating one's own business. Besides cooking and serving food, his responsibilities included purchasing the foods, supplies and equipment; planning menus for well-balanced and nutritious meals; managing revenue, accounts, and inventories; and planning promotional and seasonal programs and meals for the benefit of cafeteria patrons.

During Mr. Wolfe's reign as cafeteria manager, he and his personnel maintained an A-1 rating for the cafeteria with the Los Angeles County Health Department.

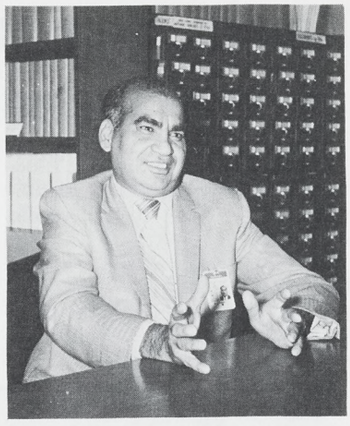
He said, "It has been so enjoyable working with such wonderful people over these years, and the relationship with Northrop and the thousands of patrons that have given me an unforgettable and rewarding experience."

Frederick C. Holp has been appointed manager of Food Services. Mr. Holp was previously director, Food Services, for Beckman Instrument, Inc. for 12 years.

He was the past president of the Food Service Executive Association, and is now in the current position of advisor — Culinary Program, Orange Coast College.

Ruby Soderlund, departmental assistant, who came to work in the cafeteria on the same day as Mr. Wolfe, June 3, 1946, will continue as assistant to Mr. Holp.

FOOD SERVICE personnel are, from left, Ruby Soderlund, Fred Holp, new manager, and Fred Wolfe, recently retired.



RAMESH TANEJA

Librarian Is an Indian-Born Prince

Ramesh Chander Taneja, Catalogue and Reference librarian, Aircraft Division, is an Indian (now Pakistan) born Prince, and his father is a Maharaja. Ramesh was raised in the royal family in Pakistan until 1947, when he and the family moved to New Delhi, India. He has knowledge of many modern European, Asiatic and African languages.

In his family there are five brothers and six sisters, all of whom have Ph.D.s.

He left India in 1959 for Canada to attend Ottawa University on a scholarship. The youngest of the five brothers, Ramesh has a master's degree in library science from that institution.

Extensive Travels

After traveling extensively throughout Europe, Asia and America, he came to California in 1962 and has been here since. He said, "Many people have a desire to visit or live in the United States because it offers the most opportunity and freedom of any country." He added, "I felt pampered and spoiled being in a royal family and I wanted to come to Canada and the U.S. to make out on my own, even though I knew I would disinherit my title as Prince."

Ramesh is a naturalized citizen of the U.S. and has been with Northrop since 1967.

GEM AND MINERAL CLUB SHOW SET

The NRC Gem and Mineral Club has scheduled its 13th annual show "Rock-A-Rific-1973" for March 17 and 18 at the NRC Clubhouse, it has been announced by Ed Foord and Gladys Johnson, club commissioners.

Admission and parking are free. Doors open from 10 a.m. to 10 p.m. on Saturday, and from 10 a.m. to 6 p.m. on Sunday.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Automobiles For Sale

Mercury, 1963 Comet, 4-dr., r/h, $300. 213-329-3900.

Oldsmobile, 1950, $175. 213-674-5831.

Datsun 240Z, 1971, a/c, 25,000 mi., $3,400. 213-373-5405.

Cougar GT, 1967, 390 eng., air, p/s, p/b, auto., r/h, $750. 213-375-7978.

Pickup Truck, 1963 GMC, ¾-ton, 8′ full cab over camper, sleeps 6, $1,595. 213-370-6896.

Corvette, 1962, 4,000 mi. on reblt. eng. & trans., $1,700. 213-372-6849.

Plymouth, 1970 Fury III, 4-dr. h/top, V-8, a/c, p/s, p/b, $1,950. 213-378-3845.

Plymouth GTX, 1968, 440 hi. perf., 4-spd. Hurst, p/s, pwr. d/brakes, $995. 213-644-3075.

Station Wagon, Ford, 1966 9-pass. Country Squire, auto. trans., p/s, r/h, recently o/hauled, $300. 714-637-9385.

Valiant, 1961, $300. Box 201.

T-Bird, 1966, auto., r/h, a/c, 8-track, p/b, p/s, $1,000. 213-324-3410.

Austin Healey, 1969 Sprite Mark IV, 63,000 mi., AM radio, Craig 8-track stereo tape deck & 2 Olson spkrs., 4-spd. trans., $1,200. 714-897-7428.

Pontiac, 1964 Tempest sedan, $350. 213-375-7709.

Chevrolet, 1965 Impala, 2-dr. h/top, V-8, auto., a/c, p/s, 53,000 mi., $750. 213-532-3378.

Chevrolet, 1965 Impala, 2-dr., V-8, p/s, 48,000 orig. mi., $750. 213-398-0377.

Toyota, 1968 Corona, 4-spd., r/h, 2-dr., $650. 213-532-6912.

Camaro, 1968 SS 396, turbo hydromatic, p/s, p/b, fact. air, $1,425. 213-698-4413.

Jaguar XKE, 1964 roadster, $1,300. 213-530-0379.

Chevrolet, 1966 Impala, 4-dr., p/s, a/c, $650. 213-644-1768.

Ambassador, 1969 SST, h/top, p/s, frnt. disc p/b, a/c, auto. trans., $1,500. 714-544-7349.

Volvo, 1969, AM-FM, $1,500. 213-324-1566.

Lincoln, 1964 Continental, a/c, full power, 4-dr., $450. 213-882-0761.

Mustang, 1966, min. bid, $800. Credit Union ext. 1117.

Mustang, 1966, $700. 213-372-0623, 213-376-9970.

Karmann Ghia, 1968, auto. trans., 41,761 act. mi., $1,200. 213-325-2512.

Volkswagen van, 1965, completely outfitted, $950. 714-637-4723.

Ford, 1965 Country Sedan sta. wagon, p/s, p/b, r/h, a/c, $550. 805-947-6901.

Dodge, 1971 Demon, 340 C.I.D. V-8, p/s, p/b, 3-spd. auto., $1,500. 213-762-1927.

Chevelle, 1968 Super Sport, auto., p/s, p/b, a/c, $1,700. 213-591-2028.

Plymouth, 1969 Fury III, $1,600. 213-675-6331.

Triumph, 1969 TR-6, 30,000 mi., $2,050. 213-826-7518.

Dodge Dart, GT, V-8, a/c, p/s, p/b, $950. 213-325-6546.

Camaro, 1968 SS 396, Turbo Hydromatic, Cragars, swaybars, $1,650. 213-371-3969.

Pickup, 1955 Chev., hvy. duty, 283, stick, $800. 213-370-1314.

Rambler, 1964, needs valve job, $200. 213-784-0533.

Miscellaneous For Sale

Room Dividers, complete, $4 ea. 213-370-5031.

Mobile Home, 1969 Kit Fairview, 20′ x 55′, 2-bdrm., 2 bath, 50′ carport, 9′ x 20′ porch, adult pk., $11,000. 714-847-7874.

Motorcycle, 1971 Honda 450 CB, 5,800 mi., hwy. bars, megaphones, $800. 213-375-3077.

Motorcycle, 1972 Honda 750, 4,100 mi., $1,300. 714-897-4098.

Dryer, elec., 220 v., Sears Lady Kenmore, $40. 213-327-0883.

Wheelchair, $75. 213-329-7122.

Motorcycle, Hodaka Super Rat, dirt, many extras. $330. 213-378-2790.

Kitchen Stove, $24. 213-939-8053.

Mattress & box springs, dble., Posture Line Supreme, bedline frame & rug runners, $100. 213-378-0463.

Refrigerator, 16 cu. ft., $20. 213-322-2364.

Sailboat, 1969 14′ Banshee, fiberglass, new sail, $450. 213-429-7879.

Miscellaneous For Sale

Motorcycle, Honda CL 175, $325. 805-526-1561.

Fishing Boat, 12′ Valcan alum., 9.5 h.p. Evinrude eng. w/stand, extras, $475. 714-531-8845.

Boat, 18′ cabin, outbd. 75 h.p. Johnson, trailer, $850. 213-676-7814.

Air Conditioner, for auto, nearly new, complete, Sears, $75. 213-672-2370.

Bedroom Set, single bed & vanity, incl. mattress, box spring & frame, $30. 213-676-6352.

Motorcycle, Sportster 1970 Har. Da., 13,000 mi., $1,800. 213-376-6340.

Boat Anchor, 35 lb., $35. 213-378-2609.

Ski Boat, 16′, new int. & ext., eng. needs work, trailer, $175. 213-423-1363.

Organ, Thomas solid state, model 120, $395. 213-641-0686.

Crib, solid-wood, mattress, German-made, $25. 213-530-1191.

Crib, white, drop sides, $10. 213-835-0608.

Sewing Machine, Kenmore, walnut cabinet, $25. 213-542-3626.

Pups, pedigreed cairn terrier, $75. 213-645-3362.

Washer, Kenmore, 3 cy., 18 lb. tub, $50. 213-376-6415.

Occasional Tables, maple, 14″ round, 2-tier, $10 ea. 213-541-3000.

Camper Jacks, $50. 213-324-8428.

Golf Bag, caddy, 5 irons, 2 woods, balls, $60. 213-644-2685.

Dishwasher, bltin, Universal-Waste King, wood front panels, new seals, $31. 714-537-6760.

Guitar, $10. 213-324-3250.

Surfboard, 6′6″, $35. 213-545-8340.

Honda CT-70, 4-spd. w/manual clutch, $200. 714-832-9054.

Coffee Table, maple, 40″ round, $10. 213-376-4831.

Sofa, brown, $40. 213-674-5953.

Eskimo Mukiuks, unborn calf & beaded, lge., $35. 213-675-1000.

Camera, Asahi Pentax SP f1.4, w/Kako rechargeable flash unit, $240. 213-823-1345.

Stroller, other baby items, $1-$10. 213-329-6091.

Boat, 15′, 35 h.p. Evinrude motor, elec. start, American brand trailer, all extras, $500. 213-398-8111.

Hair Dryer, table top, $17. 213-329-7998.

Charter Flight, L.A. to Phila., roundtrip, United DC-8, leave & return Aug., $129. 213-886-3715.

Piano, upright, walnut finish, modern cabinet, $150. 213-696-7529.

Motorcycle, 1965 Bonneville Triumph chopper, fully chromed, $1,000. 213-371-5155.

Bicycle, 26″ girl's, 3-spd. w/coaster brake, never ridden, $45. 714-847-4700.

Mag Wheels, set, 14″, Ford, 5-hole unused, $65. 213-926-7679.

Dog, collie, male, AKC, show, $75. 213-370-4475.

Hide-A-Bed, $85. 213-645-7972.

TV, Admiral 21″ b&w console, $25. 213-676-0758.

Electrikbroom, Regina, used only once, $20. 213-644-3922.

Motorcycle, 1972 Honda SL 100, extras, $400. 213-378-4422.

Boat, 12½′ Penguin, center bd., complete w/sail, $75. 213-833-6814.

Picnic Tables, redwood, benches, umbrella, $25. 213-675-6020.

Wall Ventilating Fan, 8″, still in orig. carton, $15. 213-379-4517.

Snow Tires, 2 F78-14, $12. 213-295-1750.

Table Saw, 8″ Delta, complete, $85. 213-329-9159.

Beds, twin, bookcase headbd., 2 night stands, dble. dresser w/mirror, $85. 213-675-4597.

Bed, dble., mattress, box springs, frame, $65. 213-530-3666.

Boat, 16′, 100 h.p. outbd. Mercury, trailer, $850. 213-641-1332.

Sofabed, Sealy, full size, $35. 213-672-5545.

Freezer, Kelvinator, 20 cu. ft., $100. 213- 378-9660.

Hi Chair, $8 other items, various prices. 213-676-3050.

Crib, large, $7. 213-676-0666.

Record Player, stereo, Zenith, $60. 213-320-7823.

Bedroom Set, La Coquette by Morris, French Prov., formica tops, $315. 213-329-1861.

Snow Chains, fit small autos, $5 pr. 213-676-6449.

Bicycle, boy's Schwinn Sting-ray, $40. 213-596-9748.

Motorcycle, 1968 Yamaha, 250cc street twin, completely reconditioned, $245. 213-430-3942.

Cemetery Lots, 2, Forest Lawn, Hollywood Hills, $800. 213-328-7534.

Mobile Home, 8 x 40, partially furn., $1,700. 213-641-4520.

Miscellaneous For Sale

TV, color, 23″ Zenith, walnut cabinet, $125. 213-378-2127.

Bedroom Set, French Provincial, cherry fruitwood finish, $150. 213-377-3902.

Microphones, pair, Aiwa Mod. DM-51 stereo, stands, carrying case, never used, $35. 213-324-8190.

Pups, collie, AKC, $75-$125. 213-791-1636.

Sailing Dinghy, 8′ plywood/resin, centerbd., dacron sail, oars, $100. 213-833-2301.

Camper Toilet, Monomatic, recirculating, elec. $150. 213-457-9600.

Wanted to Buy

Bicycle, Derailluer, good condition. 213-679-5177.

Jig Saw & drill press. 213-831-5304.

Cabin Cruiser, 22′-24′ glass inbd./outbd., cash. 213-326-6342.

Used Bricks, need 500 as soon as possible, reasonable. 714-846-3795.

Souvenirs, WW II German & Japanese. 213-375-4312.

Free (To Be Given Away)

Poodles, 2, pure bred female. 805-495-1448.

Child Care

Day Care, licensed home, Westchester area, planned programs. 213-670-7940.

Child Care offered, my home, hot lunches, snacks, fenced backyard, Redondo Bch. 213-372-2210.

Personals

Our sincere thanks & appreciation to all of our friends for the expressions of sympathy on the passing of our beloved wife & mother. RICHARD DAY & FAMILY.

I wish to thank all the friends for the many cards & flowers during my recent illness. JANE CAMPBELL.

Want to get in carpool from Thousand Oaks area to Aircraft Division, Air. Div. ext. 2313. 805-492-1633.

I wish to thank my many friends for their cards, flowers & best wishes during my recent illness. CHUCK BIJA.

My sincere thanks & appreciation to my friends for the flowers & expressions of sympathy on the passing away of my mother. RAY MARTIN & FAMILY.

My sincere thanks to all my Northrop friends & co-workers for their expressions of sympathy on the passing away of my mother. STU OLIVER.

Anyone knowing the whereabouts of Charlene R. Kuist, contact the Savings Plan Administration office, Century City, ext. 302.

Ride needed or wanted, 7 a.m. to 3:42 p.m., Costa Mesa, Aircraft ext. 1964, 714-548-5711.

I wish to thank all of my Northrop friends for the kindness & consideration shown during our time of sorrow. BRUCE KRAMER & FAMILY.

My wife, Ginny, joins me as I thank you all for your gracious wishes of good luck in my retirement. WALTER M. CLARK.

My sincere thanks to all my friends for the enjoyable retirement party. ROBERT L. ANDREWS.

I wish to express my deep appreciation & gratitude for the wonderful farewell party on my retirement day. JACK SANTICH.

I wish to thank all my co-workers & friends for my wonderful retirement party. L. G. BALDINI.

I wish to express my sincere thanks & appreciation to all my many friends & co-workers for the many years of fine association. JOHN K. STATES.

I wish to thank my friends for the retirement party. ALICE SIROKMAN.

Our sincere thanks to all my friends who made my retirement party a memory that will be with us for life. O.E. & VERA BLAIR.

Thanks to all my friends for a great retirement party. KEN JAMISON.

I want to thank all my friends for the wonderful retirement party. CHARLES M. MILLER.

To all my Northrop friends, thanks so much for the party on my retirement. GUNNAR E. CARLSON.

To all my Northrop friends, thank you for the retirement party. J. B. LONG.

DAVE BEAN, left, past president, and Randolph Andrews, current president of Northrop Toastmasters at the club's 20th anniversary party last month. The club meets every Wednesday evening.

SURVEY COMPLETED, RESULTS TABULATED

A survey to determine if Northrop employees are getting enough of the kind of information about the company which is useful and interesting to them was completed last week by Corporate Employee Communications.

The response was much greater than expected, with approximately 30 per cent of the questionnaires being filled out and returned.

Results are now being tabulated and will be reported upon in future issues of the Northrop News.

Personals

Any off-roaders interested in touring Baja Calif. during L.A. city schools' Easter vacation? Call 213-353-0797.

I want to express my sincere thanks to all my co-workers for the pleasant memories & party on the occasion of my retirement. JOSEPH E. WERNER.

Many thanks for the retirement gift & the send off. W.D. 'BILL' SCHRAMM.

My sincere thanks to the many friends who have made my retirement a memorable occasion. PAUL WILLIAMS.

I want to thank my many friends for the nice gifts & participation in my retirement party. KAY WALKER.

Thanks to all my Northrop friends for the farewell party which made my recent retirement a memorable occasion. MEL DUNBAR.

For Sale or Trade

Refrigerator, Frigidare, new seal & freon, $65 or trade for layout tools. 213-392-7621.

WANTED

Paperback and hard cover books for lending library for Northrop personnel on overseas assignments. Mail to Orgn. 8850, Zone 23, or call R.M. Brown, ext. 4004, Aircraft Division.

NORTHROP NEWS

Vol. 31 **No. 2**

Published monthly by Northrop Corporation Employee Communications.

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Editor—Ventura Division ..... **Park Irvine**
Editors—Aircraft, Electronics Divisions ..... **James Lassiter and Tom Quintana**
Correspondent—Architectural Systems ..... **Dale Albee**
Correspondent—Precision Products Department ..... **Peter Goodall**

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Casey, Committee, Work With Minorities, Women

Pete Casey, Customer Service assistant, Product Support, Electronics Division, Hawthorne, is serving as chairman of the 1973 Minority and Women Advisory Committee, an in-plant voluntary group of employees working to ensure that all personnel may share equally in the opportunities provided by Northrop.

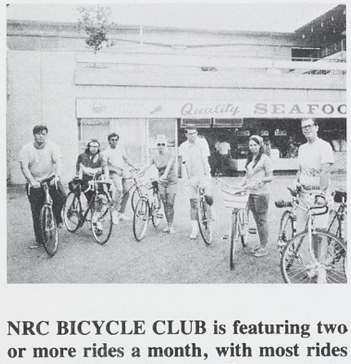
This committee provides advice and counsel to the Affirmative Action Plan Management Committee on the program policies and practices affecting minorities and women in the work force.

Other Activities

Other activities of the group consist of the Holly Park Listening Program whereby tapes and headsets are provided young children to listen to story books rather than reading them; a slide presentation to be presented to minority students at the junior and senior high school level familiarizing them with the various minority job opportunities at Northrop; and a potential program whereby part-time jobs may be available to a limited number of minority hardship students who might otherwise be financially deprived of an education.

Other committee members are Larry Lee, Otha Stubblefield, Eva Deschene, Bill Banks, Lea Benton, Ellsworth Waits and Raul Ortiz.

The next committee meeting will be held March 14 at 2:30 p.m. in the Executive Conference Room, Hawthorne facility, and anyone is invited to attend. For additional information, contact Eva at ext. 272.



NRC BICYCLE CLUB is featuring two or more rides a month, with most rides between 15 and 25 miles. They are looking for new members; novices, families, and experienced riders. To join the variety of activities the club offers, contact Bill Rogers, ext. 2476. A few club members shown are, from left to right, Ken Lea, George Krumholz, Henry Hom, Jeannie Lockhart, Fred Locarnini, Cathy Paris, and Mike Sims.

PETE CASEY

EXECUTIVE PROGRAM AVAILABLE TO ALL DIVISION MANAGERS

Electronics Division managers, chief level and above, are invited to participate in a Personnel Planning and Development program, "The Effective Executive" starting March 6, and ending April 5.

Supervisors who have successfully completed a basic management course such as the "Principles of Management" are also eligible for the five-week program.

Program hours are 5 p.m. to 7:30 p.m., Tuesdays and Thursdays, and will be held in the executive conference room, Hawthorne facility.

Peter Drucker's book, The Effective Executive, will be used as the text, and it will be supplemented by the film series of the same name. Jud Morris will be instructing the program.

SEA WORLD TRIP SET FOR MARCH

Employees and their families will have a chance to meet Shamu and his aquatic friends the weekend of March 24-25, when Sea World of San Diego plays host to Northrop.

Two specialty acts will be featured with Vic Zoble and his comedy divers, and air devil Jim Rusing flying a 16-foot kite pulled by a 500-foot tow rope behind a motor boat.

Reduced prices for employees are adults $3.25; juniors (ages 13-17) $2; children (ages 5-12) $1.50 and children under 5 free.

The admission price includes six scheduled shows and 19 continuous exhibits.

Five local hotels are offering 15 per cent discounts to Dolphin Club Card members who wish to stay for the night.

Tickets are available in Personnel Activities.

Al, Lore Collins Enjoying Scottish Culture, Hospitality

Al Collins, publications specialist, Product Support subsection, and his wife, Lore, who have been in Edinburgh, Scotland, for eight months have had to make several adjustments while living in their new cultural environment.

Al was assigned to the Ferranti facilities in Edinburgh last June to coordinate data exchange requirements for Northrop's preparation of maintenance manuals for the Ferranti Inertial Navigation Attack System used in the Harrier VTOL/STOL aircraft.

He is also representing Northrop at Smiths, Ltd. and Plessey, Ltd., London, England, who supply additional data for the Harrier manuals.

Upon arriving in Edinburgh, Al and Lore were initially faced with finding housing, but this presented some difficulty because houses are not listed with realtors as they are here. They soon discovered most houses were listed in local department stores, and eventually they leased a 100-year-old stone house from a man who lives in Tokyo. The house has radiators for central heating, and a small ice-box — which is a luxury item, as only one of eight homes may have one.

Fresh Food Daily

Shopping for food is a daily routine for Lore, and the prices are somewhat more expensive than what we pay. All the food is fresh daily and very good, according to Al, but it is not to be found in a supermarket.

Lore soon found that she had to visit several stores for individual foods. For instance, the egg market, dry foods market, green grocer, and the meat monger.

As any visitor to a foreign country, Al and Lore have adjusted to their new culture. It took them awhile to accustom themselves to driving on the left side of the road; the measurement system; the monetary system; and the cost differences for food and clothing. Al said that clothing is very expensive, but, "the Scots are the best dressed folks I've ever seen."

Sightseeing

They have become very interested in, and enjoy the Scot folklore and culture. Lore often spends her days riding busses throughout the area sightseeing and visiting historical sights.

During weekends they both take pleasure drives to see as much of Scotland as they can, and to shop for curios and antiques. They purchased a 200-year-old carriage clock that plays six Scottish tunes for an alarm.

One of their greatest pleasures is inviting their Scottish friends for dinner, American style, and in turn, enjoying Scottish hospitality and meals at their homes.

Mr. and Mrs. Collins are expected back sometime in September.

GROWTH

(Continued from page 1)

appointments have been announced: Program Office, J. P. Lockhart, director; Engineering section, J. M. Brust, director; and the Business Development Office, D. K. Shepherd, Business Development manager.

The existing organization structures for Advanced Systems Department, Avionics Operations section, Advanced Technology Office and Administration and Control section, will remain generally unchanged by this department re-organization, said Mr. Kaufold.

RADIO CLUB OFFERS CLASS FOR NOVICES

The Northrop Radio Club, beginning Feb. 28, is offering another novice code and theory class, to be taught by Don Fletcher, W6LYY, according to Bob Cobb, Radio Club commissioner, ext. 663.

Upon completion of this 10-week program, attendees will be capable of passing the Morse code and theory requirements for the novice class amateur radio license.

Everyone is invited to attend the class or any regular club meeting. The sessions will start at 7:30 p.m. in the NRC Clubhouse.

Toastmasters Hold Class for Youth

As part of its community relations program, the Northrop Toastmasters Club again presents its Youth Leadership course. This program consists of eight two-hour sessions on the fundamentals of public speaking.

The course will be held on Tuesday evenings at the Engineering Science Center, Aircraft Division, beginning on March 13. Teenaged children of Northrop employees are particularly invited to participate.

For further information call Randy Andrews, ext. 1528.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California Vol. 31, No. 3 March 1973

Shelter Tests Nearing End

Final phases of tests on the reusable shelters and logistics trailer for use by the Marine Corps are now being concluded in the east parking lot of the Electronics Division, Hawthorne facility.

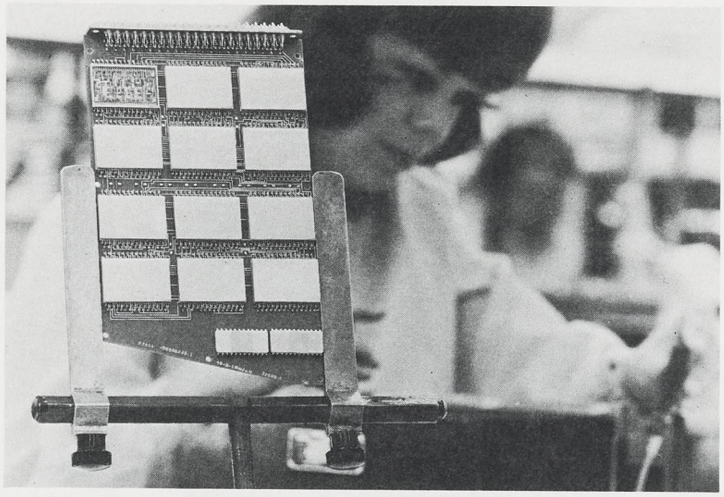
The units will be disassembled in April and shipped to Point Mugu where the Marines will conduct the severe weather conditions tests. They will then be transported to Long Beach where the disassembled units will be loaded onto container ships to test their compatibility with International Standards Organization requirements for container shipping.

Actual in-the-field tests on the shelters will then be conducted by the Marines at Camp Pendleton such as simulated beach landings, helicopter lift, air transport and ability to operate in adverse environments such as mud.

Division advisers will participate in all phases of the tests at the different locations with the final design package being turned over to the Marine Corps in August.

A review of the Shelter Test Program was made recently by Brig. Gen. Norman W. Gourley, director, Development Center, MCDEC.

REVIEWING the USMC Shelter Test Program being conducted at the Hawthorne facility are from left, Maj. Reese Holder, MC liaison officer, Litton Ind.; Capt. W. MacBeth, Quantico, Va.; John McIntyre, project manager; Brig. Gen. Norman W. Gourley (now Maj. Gen.), USMC director, Development Center, MCDEC; Lt. Col. Joseph Hopkins, NAVMAT Naval Laboratories; Mike Hauser, Naval Laboratories; John Bloodworth, project manager; Cmdr. D. Lutz, REIC, Quantico, Va., and Dave Bond, shelter engineering supervisor.



TOP/20 in the hybrid configuration is Northrop's latest development in the line of digital airborne computing capability.

First Aid Graduates

Electronics personnel at the Hawthorne facility are operating under an even safer atmosphere than before as 20 of their members have graduated from the Red Cross Standard First Aid Course.

J.J. Rahiya conducted the 10-week course which is part of the division's effort to educate all personnel in safety procedures while at the same time supplying an immediate response group.

The graduates are: first shift — Eva Deschene, Harvey Guiles, Eva McLeskey, Donald Meyer, Marie Niehaus, Robert Pina, William Rice, James Schallmo, Don Shigaki, Tony Simone, Jean Tobias, Minnie Stillwell, Lloyd Towles, and Steve Vavrek. Second shift — Manuel Carrillo, Elvira Harris, Weyland Lopes, Doris Oransky, Elque Washington, Wilfeyt Wilson.

Publications Drive Begins in Division

A drive to get more Northrop technical papers and publications before our customers has been announced by D.N. Ferguson, vice president and general manager of the Electronics Division.

Referring primarily to the engineering sections of the division, Mr. Ferguson called for increased efforts at all levels to give Northrop greater exposure among potential markets through announcements, papers and related materials.

"Let us make increased technical contributions to professional societies such as AIAA and IEEE. When we host Northrop field marketing representatives concerned with Omega, BLIP, Precision Products Department, let us give these gentlemen authoritative information to take back with them to distribute within their own agencies," Mr. Ferguson said.

The drive will be geared to supervisors and their subordinates within the division capable of authorizing or initiating papers but who are hesitant because of procedural requirements.

New Computer Meets Needs

In meeting the needs of today's sophisticated avionics systems, the TOPS (Task Oriented Processing Systems) concept is the latest development in Electronics Division's line of digital airborne computing capability.

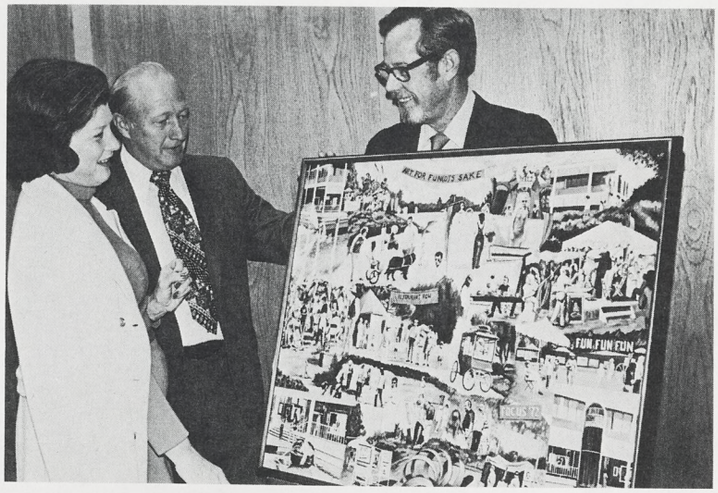
Utilizing cost effective, miniaturized components, TOPS represents a dramatic reduction in size and weight in relation to contemporary techniques.

Basic element of the system is the TOP/20, a general purpose computer capable of performing programmed instructions at the rate of 1.6 million operations per second. An eight microsecond hardware multiply/divide option is available.

The TOP/20 can be used as an independent computer, special processor, or in conjunction with a central processor. It is literally a "digital building block" from which data processing requirements can be satisfied by simply attaching the necessary number of TOPS units.

The new computer operates with a high speed program memory (ROM) and scratch pad (RAM) and medium speed magnetic core or semiconductor memory (MOS). The total device packaged in hyb-

(See TOPS, page 8)



IN RECOGNITION of the participation given by the Electronics Division in the past seven years to the Art for Fun(d)s Sake festival held yearly at the Palos Verdes facility, an oil painting depicting the highlights of past festivals is presented to David N. Ferguson, vice president and general manager. Making the presentation is Marilyn Fowler, president of the Palos Verdes Art Association and F. A. Hogrebe, artist, who created the painting.

F-5E Commitments Top 450-Mr. Jones

Program commitments for Northrop's F-5E International Fighter have already surpassed the 450 mark — "even before the delivery of the first aircraft" — Thomas V. Jones, president and chairman, announced before the New York Society of Security Analysts.

Mr. Jones said, "We now can see a realistic potential that would bring F-5E orders to nearly 600 aircraft in the next year or two."

He emphasized the favorable impact of the F-5E on the U.S. balance of trade by saying: "Sales of 1000 airplanes, together with their optional military and avionics equipment, spare parts and support programs, will contribute nearly $2 billion to U.S. exports."

In reviewing the company's over-all business for the past year, Mr. Jones noted that the three largest product areas in 1972 were aircraft with 45.3 per cent of total sales, electronics and communications with 32.1 per cent and building construction with 16.5 per cent. He said that 56 per cent of our business is with the U.S. military services, while commercial and other markets account for 44 per cent. About 30 per cent of the company's business was international in scope, he added.

Commenting on other company aircraft programs, Mr. Jones said that the P-530 Cobra continues to attract substantial interest in a number of nations, most recently The Netherlands and Australia. He stated that "automated systems the company applied to its production of the main fuselage section of the Boeing 747 makes it possible to continue to produce these assemblies at a profit, even though the production rate of the 747 is at a very low number."

In electronics, Mr. Jones said the company's development of a new navigation system that combines inertial and radio guidance will create a whole new family of automatic navigation equipment.

The company's work in communications systems includes heading an international consortium that is installing a complete, integrated nationwide telecommunications system in Iran; the completion of a national television and radio broadcasting system in Greece; and a 72-voice radio network in Northern Canada.

In the construction field, the George A. Fuller Company, "was quite successful in securing new orders in 1972 which should be translated into sales and higher earnings in 1973," Mr. Jones said.

In other miscellaneous product categories of the company's business, Mr. Jones noted that higher than expected development and start-up costs on the fiberglass barges for maritime use resulted in a net loss in this area.

Looking ahead, Mr. Jones pointed out that aircraft sales for 1973 may see some small increase; electronics and communications group sales should maintain its present sales volume; and that the problems in miscellaneous product areas and related activities "are largely behind us and we expect profit in those areas."

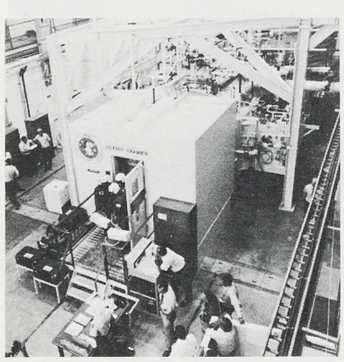
Potential Gains

"In summary," Mr. Jones said, "depending on a successful year of contract acquisitions, particularly in the non-aircraft areas, and depending on successful negotiations on certain existing contracts, Northrop expects a somewhat higher sales volume in 1973 than in 1972. The cycle we are currently in makes it unwise to predict earnings for 1973. However, during this year of 1973 we do see several areas of potential gains over 1972; and with certain negotiations successfully concluded and with the increasing aircraft production rate, by the end of the year we expect to be approaching the higher profit rate we have experienced in the past. This, taken with the higher backlog anticipated at the end of the year, gives us the basis for favorable expectations in 1974."

SMEAT Team Operates 'Round the Clock at NASA

There is a new word in the Northrop/Crew Systems Laboratory vocabulary: "SMEAT."

SMEAT means "Skylab Medical Experiments Altitude Test." Information generated from this highly successful test at NASA's Manned Spacecraft Center, Houston, Tex., is necessary to support the Skylab flights scheduled for 1973.



SMEAT astronauts are shown at the entrance to the 20-foot altitude chamber which was home for 56 days. Northrop-Houston personnel man the test equipment associated with the chamber.

Northrop Services, Inc., personnel participated in the test team as the support systems operators and performed their work on the test 24 hours a day, seven days a week.

The primary objectives of SMEAT deal with basic medical data as related to the Skylab program. Secondary objectives were those that deal with evaluation of Skylab flight hardware, procedures and ground support operations and equipment.

The testing facility was a 20-foot altitude chamber and lock specially modified to represent Skylab features, systems, and medical experiment equipment.

A three-man astronaut crew — Lt. Cmdr. Crippen, Major Bobko and Dr. Thornton — spent 56 days in the 20-foot chamber. The crew bay included sleeping quarters, dining area, upper level study, recreation and exercise area and personal hygiene area.

The NSI-Houston operation is under direction of Project Manager Harry P. Clagett.

FULLER COMPANY TO BUILD CENTER

The George A. Fuller Company, a Northrop subsidiary, has been named construction manager for J.C. Penny Company, Inc.'s proposed Catalog Distribution Center in Columbus, Ohio.

The approximately 150-acre site on which the center will be constructed will be the J.C. Penney Company's third catalog distribution center.

The New York office of the George A. Fuller Company will handle the project, acting as a total service organization during both the design and construction phases.

Vice President in charge will be Daniel Head, and the project manager will be Richard Ballou.

DIVIDEND DECLARED

The board of directors has declared a quarterly dividend of 25 cents per share on Northrop common stock, payable March 24 to common stock of record March 5.

The board also declared a quarterly dividend of 36¼ cents per share on Northrop $1.45 cumulative preferred stock, payable April 7 to preferred stock of record March 20.

Earnings Up for Calendar Year

Northrop reported increased earnings on sales of $573,749,000 for calendar year 1972, Thomas V. Jones, Northrop president, has announced. Net income for the year was $11,136,000, or $2.57 per primary share.

In view of the company's change from a fiscal year to a calendar year in 1971, Northrop, for purposes of comparison, provided audited figures for the 12-month period ended Dec. 31, 1971. For calendar 1971, net income amounted to $10,995,000, equivalent to $2.34 per primary share on sales of $573,943,000.

Order backlog on Dec. 31, 1972 totaled $768 million compared to $619 million a year earlier.

Net income for the fourth quarter was $3,209,000, or 78 cents per primary share on sales of $159,301,000. This compares with net income in the fourth quarter of 1971 of $1,620,000, or 35 cents per primary share on net sales of $158,711,000. Mr. Jones noted that fourth quarter results also increased over the third quarter of 1972 when net income was $2,846,000 and sales were $146,822,000.

There were 3,932,931 shares outstanding on Dec. 31, 1972 compared with 4,335,321 a year earlier.

On a fully diluted basis, per share earnings in calendar 1972 were $2.22 compared with $2.05 for the year earlier.

Mr. Jones pointed out that the $11,136,000 in net income for calendar 1972 had met the company's operating plan despite charges against income for higher than expected development and start-up costs on the project to develop and introduce fiberglass barges for use on LASH (lighter aboard ship) freighters.

"These increased costs," Mr. Jones said, "were in part offset by good performance on several basic programs as well as cost reductions in several segments of the company."

Northrop Employees' Savings Plans Annual Report for 1972

The eleventh Annual Report on the financial condition of Northrop Employees' Savings Plans covers the 17 months period from Aug. 1, 1971 through Dec. 31, 1972. It includes the five months period from Aug. 1, 1971 through Dec. 31, 1971 due to changing the Plan Year to coincide with the change in the company's Fiscal Year, and also the Plan Year ending Dec. 31, 1972.

The report shows the condition of the Trust at Dec. 31, 1972, the values for each fund, and the securities held in each fund at that date. The report also summarizes the cash transactions for five months ended Dec. 31, 1971, the year ended Dec. 31, 1972, and since the inception of the Salaried Plan on Feb. 1, 1962, and the Hourly Plan on Feb. 1, 1966.

Unit values for each fund are shown as of the end of each Plan Year through July 31, 1971, for the five months period ending Dec. 31, 1972 and by quarters for the Plan Year ended Dec. 31, 1972.

Summary of Transactions through Dec. 31, 1972

	5 Months Ended 12/31/71	Fiscal Year 1972	Since Inception
Cash Received:			
From Salaried Participants	$ 2,399,461	$ 6,230,300	$ 50,333,324
From Hourly Participants	341,868	790,258	8,015,612
Total Participants Contributions	$ 2,741,329	$ 7,020,558	$ 58,348,936
From Northrop (50% Participant Contributions less Forfeitures)	1,227,721	3,032,006	25,022,038
Total Contributions	$ 3,969,050	$ 10,052,564	$ 83,370,974
From Sale of Bonds	2,458,153	6,652,388	33,549,975
From Sale of Stocks	6,936,256	22,974,569	61,067,655
From Income on Bond Fund Investments	301,854	721,593	4,260,445
From Income on Stock Fund Investments	219,356	517,533	2,682,647
From Income on Northrop Stock Fund	290,147	665,818	3,354,605
From Sale of Temporary Investment in Profit Fund		687,000	1,787,000
Total Cash Received	$ 14,174,816	$ 42,271,465	$190,073,301
Cash Paid Out:			
For Purchase of Bonds (Including Accrued Interest Paid)	2,678,520	7,466,564	46,910,017
For Purchase of Stocks	7,729,582	26,216,093	84,279,123
For Purchase of Northrop Stock (69,100 shares during 5 months; 146,600 shares for Fiscal Year '72; 995,758 shares since inception)	1,515,941	4,208,857	29,020,162
To Participants on Withdrawal (in addition to 19,825 shares of Northrop Stock during 5 months and 42,044 shares in Fiscal Year '72; 280,557 shares since inception)	2,082,548	4,545,508	29,667,197
Total Cash Paid Out	$ 14,006,591	$ 42,437,022	$189,876,499
Balance	168,255	(165,557)	
Cash on Hand (beginning of period)	194,134	362,359	
Cash on Hand (end of period)	$ 362,359	$ 196,802	$ 196,802

Summary of the Condition of the Trust at Dec. 31, 1972

Cash on Hand:		
For Purchase of Bonds		$ 21,690
For Purchase of Stocks		105,051
For Purchase of Northrop Stock		70,061
Total Cash on Hand		$ 196,802
Interest Accrued on Bonds and Temporary Investments		186,783
Dividends Declared but not Received on Stocks		36,743
Market Value of Investments:		
Purchased with Participant Contributions:		
Bonds (Cost $12,411,012)		11,843,834
Stocks (Cost $23,842,274)		33,747,619
Purchased with Northrop Contributions:		
Northrop Stock (Cost $19,246,379)		16,714,023
Total Value of Trust		$ 62,725,804
The Value of the Trust is divided as follows:		
Participants' Savings Accounts:		
Bond Fund	$12,048,926	
Stock Fund	33,892,684	45,941,610
Participants' Profit Account		16,784,194
Total Value of Trust		$ 62,725,804

Investments as of Dec. 31, 1972

Bond Fund	Face Amount	Cost	Market
Public Utility	$ 3,249,000	$ 3,106,813	$ 3,011,566
Industrial	3,657,750	3,315,881	3,105,880
U.S. Government	1,519,000	1,511,102	1,506,696
Banks & Financial Institutions	1,450,000	1,439,330	1,321,181
Federal Agencies	1,720,000	1,689,375	1,711,750
Foreign	159,000	159,000	135,261
Commercial Paper	615,000	615,000	615,000
Convertible Debentures	550,000	574,511	436,500
	$ 12,919,750	$ 12,411,012	$ 11,843,834

STOCK FUND		Shares	Cost	Market
American Express Co.	pfd	2,000	$ 139,000	$ 389,000
American Express Co.	com	18,000	354,960	1,167,750
American Hospital Supply Corp.	com	20,200	442,693	989,800
Automatic Data Processing	com	8,000	468,000	731,000
Avon Products	cap	13,000	1,099,294	1,777,750
Citizens & Southern Natl. Bank of Ga.	com	10,000	226,820	482,500
Coastal States Gas Producing	com	7,600	379,598	263,150
Colonial Penn Group	com	11,000	554,500	701,250
Columbia Gas System	com	20,000	683,500	617,500
Combined Insurance Co. of America	com	12,988	383,488	264,630
Control Data Corp.	com	5,000	580,252	301,875
Deluxe Checks Printers, Inc.	com	17,000	637,500	641,750
Digital Equipment Corp.	com	6,000	481,538	550,500
Duke Power Co.	com	10,000	227,500	232,500
Eastman Kodak Co.	com	6,040	349,759	896,185
Eli Lily & Co.	com	9,000	573,750	716,625
Franklin Life Insurance Co.	com	24,500	662,313	765,625
Federal National Mortgage Assoc.	com	38,500	818,730	770,000
Fluor Corp.	com	8,610	226,038	299,197
General Electric Co.	cap	14,000	631,705	1,020,250
Hanna Mining	com	15,000	812,276	898,125
Hospital Corp of America	com	15,000	472,538	553,125
International Business Machines Corp.	cap	4,700	1,266,556	1,889,400
International Paper Co.	com	10,000	342,510	418,750
International Tel. & Tel. Corp.	com	17,000	904,947	1,024,250
Johnson & Johnson Co.	com	12,000	223,609	1,566,000
Marley Co.	com	9,000	465,057	481,500
Merck & Co.	com	10,000	523,426	891,250
MGIC Investment Corp.	com	2,000	157,810	191,500
Middle South Utilities, Inc.	com	7,600	184,960	203,300
Milton Bradley Co.	com	16,833	403,805	494,469
Norton Simon, Inc.	com	22,175	500,453	928,572
Owens Corning Fiber Glass	com	10,000	474,642	548,750
Polaroid Corp.	com	3,046	338,505	384,177
Prudential Building Maintenance	com	20,700	451,314	525,263
Reynolds Industries	com	10,000	767,874	516,250
Schering Corp.	com	10,000	549,110	1,370,000
Schlumberger, Ltd.	cap	22,500	279,752	2,036,250
South Carolina Electric & Gas Co.	com	10,000	250,000	248,750
Sony Corp.	com	2,000	117,279	122,000
Southern Co.	com	5,000	137,963	100,625
Tampax, Inc.	com	4,000	295,950	466,000
TRW, Inc.	com	7,200	238,075	245,700
Virginia Electric & Power	com	30,000	540,000	671,250
Wickes Corp.	com	14,000	570,105	376,250
Xerox Corp.	com	7,300	728,991	1,089,525
Ford Motor Credit Co. Notes			803,000	803,000
U.S.A. Treasury Bills			1,120,823	1,124,751
			$23, 842,274	$33,747,619

PROFIT FUND	Shares	Cost	Market
Northrop Corporation	715,201	$19,071,379	$16,539,023
Commercial Paper		175,000	175,000
		$19,246,379	16,714,023

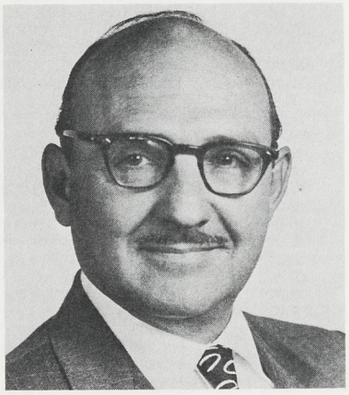
HISTORY OF UNIT VALUES

Valuation Date	Bond Fund	Stock Fund	Profit Fund
7/31/62	$1.00678	$ .82673	$ .84299
7/31/63	1.07228	1.03982	.74533
7/31/64	1.12346	1.25478	.64951
7/31/65	1.18096	1.31530	1.05750
7/31/66	1.12924	1.38824	.97052
7/31/67	1.17227	1.78819	1.78347
7/31/68	1.17991	1.98598	1.62488
7/31/69	1.14589	1.94687	1.48373
7/31/70	1.14710	1.66295	.73156
7/31/71	1.31717	2.29024	.82760
12/31/71	1.40732	2.48758	.95972
3/31/72	1.43565	2.68465	1.14359
6/30/72	1.46531	2.70275	1.02708
9/30/72	1.48070	2.75355	1.00581
12/31/72	1.51755	2.91606	1.06317

The complete annual report of the trustee is available for inspection, during regular first shift hours, in the Industrial Relations office serving your facility.

Chapman Fills Key Role in Scandinavia

"Northrop International regional managers are charged with seeking out new business opportunities in accordance with division and subsidiary objectives and plans. The regional managers continually interface with key customer elements in their areas.



LLOYD CHAPMAN

"They work with and support the divisions and subsidiaries in the development of marketing strategy.

"They must reflect to the customer an integrated Northrop Corporation approach and insure that good performance of one division or subsidiary is used to advantage by other divisions and subsidiaries trying to get established in the same country." — C. Robert Gates, vice president, Northrop International.

One of the men who fills these key assignments is Lloyd D. Chapman, regional manager of the Scandinavian office in Oslo, Norway. Sweden, Denmark and Finland are also part of his assignment. He arrived there in August 1970 replacing Walter A. Byers, who is now in the Corporate office in Century City.

Mr. Chapman is heavily involved in the Cobra marketing effort in Norway, as Norway is among those countries that Northrop hopes to make an original participant in the Cobra program.

He is also busy fostering the interests of all of the Northrop divisions and subsidiaries in Scandinavia.

Mr. Chapman was born in April 1919 in Walters, Okla. and attended schools in that state through college at Northeastern State.

He entered the then Army Air Corps after college and was commissioned in 1941. He commanded heavy bombardment squadrons in both WWII and Korea, and during peacetime he commanded Strategic Air Command units and was chief of staff of the Second Air Force at Shreveport, La.

He was a member of the Net Evaluation Subcommittee of the National Security Council and was responsible for conducting briefings for President Eisenhower and then Vice President Nixon for a two-year period.

His last assignment before retirement was as deputy director of Air Force Programs at Air Force Headquarters in Washington, D.C. He has been stationed over most of the world while serving in the USAF and was retired as a colonel in February 1970 after completing 30 years' service.

Many Pilot Hours

Mr. Chapman has over 7000 hours as a pilot in all types of military aircraft from small jets to the B-52, and his military decorations include the Legion of Merit, Distinguished Flying Cross, Bronze Star and the Air Medal.

While in the Air Force, Mr. Chapman graduated from the Air Force Management School, Army/Air Force Intelligence and Language School, the Air Command and Staff College and Air War College. One of his military assignments was as air attache to Norway from 1961 to 1964.

SILVER WINGS which Ventura Division's Curly Martin wore as pilot during World War II are proudly pinned by Curly on chest of his son, Tom, at ceremonies held at Webb Air Force Base.

Silver Wings Passed on To Son by Veteran Pilot

Curly Martin's wings are flying again.

The silver pilot's wings he wore during four years' service in World War II, now proudly grace the chest of his son, Tom.

Curly pinned the wings on Tom's uniform in a moving ceremony on Feb. 28 at Webb Air Force Base, Big Springs, Tex. Mr. Martin is manager, Arts and Graphics at the Ventura Division.

It was just a few weeks short of the date, March 10, 1943, when Curly received the silver wings at Williams Field, Ariz.

And, Lt. Tom Martin who is 23, will be flying Air Force transports following completion of his training in C-141 Starlifters at Altus AFB, Okla. In this, he will again be following in his dad's contrails as Curly flew C-47 transports in the Central Pacific during World War II.

Lieutenant Martin took his initial jet training flying Northrop T-38 Talons where he put in 200 hours time.

Curly's silver wings amassed 2000 hours flying time when he wore them. He expects Tom will put another 2000 hours on them.

Who knows, perhaps somewhere along the line the wings will accompany a grandson of Curly's to some distant planet!

New Color Scheme Brings Favorable Reaction

Eleven educators from four Orange County high school districts and the North Orange County Regional Occupational Program visited the Electro-Mechanical Division to view the machine shop painting program under way.

Under the program, machine shop equipment is being repainted from the original dark colors to bright, contrasting hues. This has resulted in a brighter work environment and has received very favorable reaction from machinists using the area.

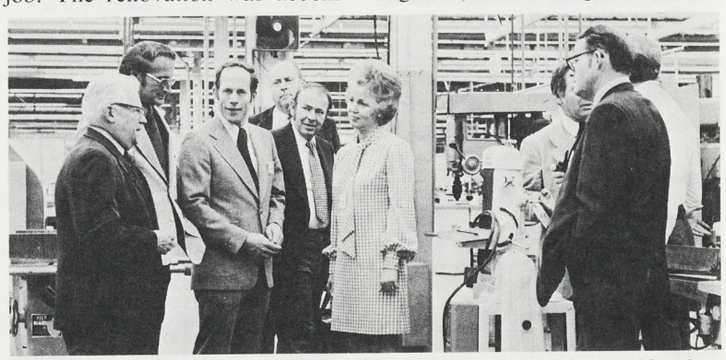
The school districts are interested in possible application of a similar renovation of their school shops, feeling that the brighter, more congenial atmosphere will react favorably on student interest. They earlier asked the division for information on the program and for color samples of the plan.

The painting project is an outgrowth of a general plan by Don McInnis, vice president for Operations, to modernize and generally improve the Anaheim plant and areas.

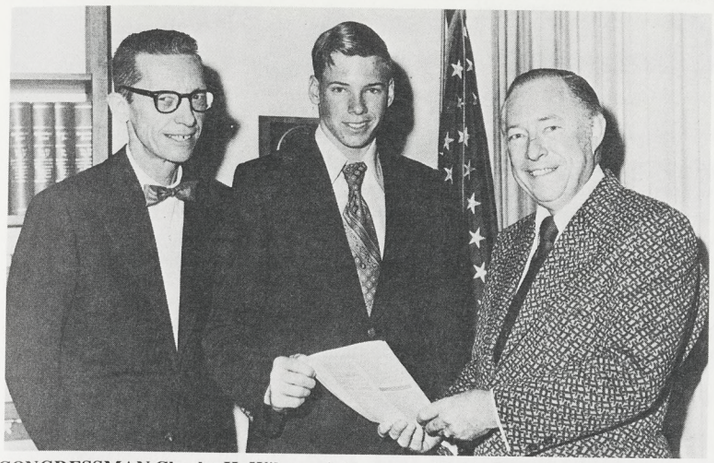
The contrasting color scheme, which resulted in lathes, mills, drills and other machines being painted lavender, cerise, yellow, apple green, and other colors, was worked out by Graphics artist Bob Peck.

The major part of the actual painting was done by volunteers who devoted off-duty time in the evenings and on weekends to the job. The renovation was accomplished under direction of Ed Hofmayer, manager, Methods Engineering, in cooperation with Art Eckel, manager, Production Fabrication. Coordination was handled by Julian Bloom.

The visiting school group was led by Stan Ross, superintendent, North Orange County Regional Occupational Council, and was shown through the Anaheim plant by Merrill E. Skilling, chief plant engineer, who arranged the tour.



ORANGE COUNTY educators visit the Electro-Mechanical Division machine shop to view the bright-colored equipment which has been repainted in a new contrasting color scheme.



CONGRESSMAN Charles H. Wilson, right, poses with Air Force Academy appointee Bill Johnson, center, and with Bill's father, H. A. Johnson.

TO AIR FORCE ACADEMY

Congressman Appoints Johnson

Bill Johnson, who at the age of 17, obtained his private pilot's license, has been appointed to the U.S. Air Force Academy, near Colorado Springs, by Representative Charles H. Wilson, D-31st District.

Bill is a senior at South High, Torrance, an "A" student, and participates in football, baseball and basketball, and is active in the Boy Scouts.

His father is H. A. "Johnny" Johnson, a retired Air Force test pilot who flew Northrop P-61s and the N9M wing, and is now an engineering specialist with the Aircraft Division.

Employee's Son Represented in Outstanding Young Men of America

Ronald D. Koller Jr., son of Ronald D. Koller Sr., of Transportation, Aircraft Division, has been represented in the 1972 volume of Outstanding Young Men of America, eighth edition.

The volume recognizes young men for their service to others, professional excellence, civic and professional recognition, and community activities. Nominations are made by college alumni associations, men's civic organizations, and commandants of military organizations.

Ron Jr. holds a master's degree in recreation from San Francisco State College, and is presently a Ph.D. candidate at the University of Utah. He was voted man of the year, 1968, by the San Rafael Junior Chamber of Commerce.

Ron Koller Sr. has been with Northrop since 1949.

RON KOLLER Jr. with father, Ron Koller Sr.

Debra Christian Attends School In Tepic, Mexico

Debra Christian, 16-year-old daughter of Leonard Christian, machine shop foreman, Northrop Research and Technology Center, has been selected as an exchange student to Tepic, Mexico, near Guadalajara, for the spring semester.

Miss Christian

Miss Christian, a student of Paramount High School, was one of four students chosen for the exchange program. She received the honor because of her outstanding personality and her ability to get along with other people so well.

She was voted representative of her sophomore class, and is a member of Campus Life at school, a religious organization.

Carolyn Bernal Honored As DAR Good Citizen

Carolyn Bernal, 17-year-old daughter of Aldie Bernal, Off-Site Fabrication, Mariposa facility, was recently honored by receiving the Daughters of the American Revolution (DAR) Good Citizen Award.

The DAR award is given annually to senior girls who exemplify leadership, dependability, patriotism and quality of service on a school level. DAR searches throughout public, private and parochial schools to honor these girls.

Miss Bernal

Each award winner receives a pin and certificate and is eligible to compete for a higher prize. The top prize is a $1000 scholarship.

Carolyn, a Hawthorne High School senior, is the editor of the school newspaper, president of the Choraliers and vice president of the choir.

Students Get Firsthand Look At Credit Union

The Northrop Credit Union's Mini-Career Day for 1973 took on an international flavor this year when two girls from the South Bay Unified School District, one an exchange student from Ensenada, Mexico, were guests of Mary Delaney, Credit Union secretary-treasurer, Hawthorne.

Mini-Career Day is held annually in conjunction with the Altrusa Club of Redondo Beach of which Mrs. Delaney is a vice president. The public service oriented club sponsored 15 high school coeds with nine of them hailing from Mexico on the foreign exchange student program.

The two girls participating in the Credit Union's annual program were Patty Rodriquez from Ensenada, Mexico, representing Redondo Union High School, and Jeanne Macaluso of Manhattan Beach, representing Aviation High School.

The coeds had been selected by their respective schools to participate in Mini-Career Day which is a program designed to give business-minded students a chance to observe the Credit Union in full operation and learn various business techniques and procedures.

Miss Rodriquez is a business major attending Redondo High School on a one-year program concentrating primarily on the English language. She graduated from the Commercial Institution of Marillac majoring in business. Redondo Beach is sister city to Miss Rodriquez' home town of Ensenada.

Jeanne Macaluso is a senior at Aviation High School and will graduate in June. She will then enroll in college and pursue a business career.

IS IT NEWS?
CALL EXT. 4273
HAWTHORNE

Atkinson Soccer Team Member

David Atkinson, 17-year-old son of Bill Atkinson, A-X engineering specialist, Aircraft Division, was a member of the UCLA soccer team that competed in the Orange Bowl, Dec. 28, against St. Louis University for the NCAA soccer championship.

Although UCLA was runnerup, Dave accomplished something very few other young men do in NCAA athletics. He competed at the NCAA championships as a 17-year-old freshman.

Mr. Atkinson

Dave, an engineering student, began playing soccer with the American Youth Soccer Organization (AYSO), in the South Bay area, and became his high school soccer team captain, and a member of the all CIF team. There were 50 boys, age 7-15 in the AYSO when formed in 1965; now there are over 7200 boys and 520 teams.

Bill Atkinson is also a member of AYSO, and serves as a coach, referee, and South Bay district commissioner.

MARY DELANEY, right, shows students how the Credit Union files loans.

WANTED: 10,000 NEWS REPORTERS

By Rosemary Hussey
Managing Editor, Northrop News

Many of the comments received from the recent communications survey conducted at Northrop's Southern California operations indicate that employees would like to see more news about individuals and their activities and accomplishments.

So would we.

But the limited staff of the Northrop News must depend upon Northrop people for news tips, leads and story ideas.

Mrs. Hussey

Each division has an editor who can write the story, plan the photography and arrange the layout of his edition; but this editor cannot be aware of all the newsworthy individual accomplishments without your help.

We have considered appointing correspondents within each department or operation, but this has proved impractical in the past.

But you can be our correspondent — by letting the Northrop News know of your activities or the activities of your fellow workers.

Because Northrop people are interested in other Northrop people, the accomplishment does not have to be of an enormous magnitude.

A few hours a week working with the handicapped, an interesting hobby, a vacation to an unusual spot, a unique talent — all are worthy of consideration for a story.

So remember these names and locations: Ventura Division, Park Irvine, ext. 1163; Precision Products Department, Pete Goodall, ext. 307; Electro-Mechanical Division, Ivy Edmonds, ext. 515; Aircraft and Electronics Divisions, Tom Quintana, ext. 4273 (at Aircraft).

The Northrop News is your paper — call them!

Credit Union Elects Officers

The Hawthorne Northrop Credit Union board of directors has elected officers for 1973. H. L. Cook is president, B. M. Slotnick, vice president, and Mary B. Delaney, secretary-treasurer.

Other directors, announced last month, are: L. L. Cripe, R. D. Hampton, R. A. Lindsey, J. S. Penrod, J. J. Richardson and W. H. Waysman.

Subordinate officers named are: Charles H. Scott and Florence Montgomery, assistant treasurer; Wilma Robinson, cashier; Helen Walker, membership chairman; and Margaret Faubion and Norma Thomas, loan officers.

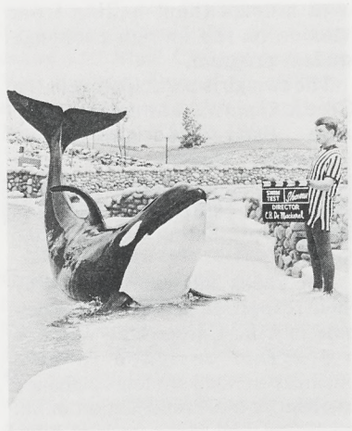
The Credit Committee includes: R. C. Pontious, chairman, Margaret Faubion and W. H. Justice Jr.

Supervisory Committee members are: T. A. Hruska, chairman, S. D. Parr, secretary, E. R. Foord, A. W. Johnson and H. H. Sweet.

CONGER FEATURED SPEAKER AT SIMI

Ken Conger, Ventura Division Engineering, was one of the featured speakers at the annual Career Day at Sinaloa Junior High School in Simi Valley on Feb. 28.

Mr. Conger discussed engineering as a career with the students at two assembly periods.



SHAMU GETS some last minute rehearsal before entertaining for Northrop Days this weekend at Sea World in San Diego. Employees wishing to make the trip using recreational vehicles or towing campers will be able to use the Campland facilities at the park with an overnight rate of $3.50, which includes use of hookups and showers. Deadline for Campland's reduced rate is Mar. 22, with a $1 minimum deposit. Contact Kay Clark at ext. 2486, Hawthorne. Six scheduled shows, 19 continuous exhibits, plus a choice of two rides and free Shamu kites for children are included in the admission to Sea World.

DISNEYLAND

NRC Family Fun Night at Disneyland is scheduled for Saturday, May 19, from 8:30 p.m. to 1:30 a.m. Tickets are $4.

Comment . . .

The Northrop News will publish in each issue a selection of letters which, in the sole judgment of the editors, are of the broadest general interest. Remember that the best sources for information about Northrop practices are your "Working With Northrop" booklet or your immediate supervisor.

Letters should be addressed to "Comment, Northrop News, 170/40."

Why not publish a company yearbook, with stories and photos of all personnel, similar to a school annual?

Bob Peck
Electro-Mechanical

The publication of such a book would be impractical because of the time and personnel required. Many Northrop people retain the Northrop News monthly editions, which serve the same purpose. The technical library at the Hawthorne facility maintains bound copies of past editions for reference.

Is there a committee to which women, as a class, may go to air their problems, similar to the various minority committees which have been established?

Unsigned
Electronics

The Employee Relations offices at all Northrop facilities are staffed to deal with problems specifically related to women in the Northrop organization. Feel free to voice your problems with the assurance that they will be heard in confidence.

I think the benefits of being a member of the big Northrop family should be publicized more, such as reduced prices on merchandise.

M. Lellock
Aircraft

The Personnel Activities desk at each facility will be glad to explain the various reduced price merchandise and activities available. The Northrop News attempts to publish new items as they become available, and bulletins are posted on many of the boards. But items are constantly changing, and the Personnel Activities desk is your best source of information.

The 1971 "Summary of Year's Activities Prepared for all Northrop Personnel" has the best — and only consolidated — basic data about the company with which one can show outsiders who and what we are. Can this be made an annual publication?

R. Clark
Corporate

This report, now informally called "an annual report to employees" will be issued each spring. This year's edition will be distributed early next month.

TRAVEL CLUB SCHEDULE

Tour	Departure and Return	Sponsor
Caribbean Fly/Cruise— 12-day special, $549 plus taxes	April 26-May 7	Hawthorne
Alaska Fly/Cruise— Inland passage cruise, $479 and up	May 13-May 23 Sept. 26-Oct. 7	Hawthorne
Hawaii-Northrop Special— 8-day Waikiki Hotel, $244 plus taxes	June 2-June 9	Hawthorne
Tahiti—Moorea, $609, two weeks	Aug. 10-Aug. 24	Anaheim

For further information call Jack Kinzer, at Anaheim, ext. 437; Jeanne Andrecht at Electronics (Hawthorne) ext. 542; or Dave Carney at Aircraft ext. 2486.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month. (California operations.)

Vehicles For Sale

Sunbeam Tiger, 1967 260, 1-owner, $2000. 714-543-0435.

Corvette, 1969, r/h, mags, d/brakes, $2250. 213-860-9451.

Karmann-Ghia, 1965 convt., r/h, new paint, $850. 213-371-0256.

Chevrolet, 1966 Caprice, $500. 213-675-9213.

Motorcycle, 1957 Ariel Square Four, orig., $1500. 213-751-3014.

Corvette, 1968, 327, 4-spd., p/s, FM/AM radio, $3700. 213-324-0425.

Pinto, 1972, 3-dr. Runabout, a/c, auto., roof rack, radio, $2200. 714-897-4098.

Mustang, 1965, 6-cyl., stick shift, $450. 213-752-9197.

Chevrolet, 1967, standard trans., $600. 714-842-6838.

Corvette, 1963 Fastback, 427-425 h.p., flared fenders, mag whls., $1300. 213-376-9538.

Motorcycle, Hodaka 1972 Super Rat, dirt, many extras, $295. 213-378-2790.

Station Wagon, 1969 Pontiac Catalina, 9-pass., a/c, full power, $2395. 213-375-8536.

Mustang, 1968 2+2, a/c, $1400. 213-371-2269.

Buick, 1969 Riviera, full-power, $2650. 213-532-9187.

Volkswagen, 1971, radio, 18,000 mi., under warranty, $1595. 213-377-3858.

Chevrolet, 1954 Bel Air, 4-dr., r/h, Hydrmat., $350. 805-526-1561.

Motorcycle, MX Honda 50, dn. megaphone, 32" handle bars, Trail 90 carb., extras, $125. 213-274-0589.

Mustang, 1969 Fastback, 4-spd., 390 eng., $1500. 213-423-1363.

Capri, 1971 Sport Cpe., 1600 cc, 4-spd., air, radio, $1600. 213-396-5837.

Fiat, 1970 850 sport cpe., 35,000 act. mi., $900. 805-498-8938.

Volkswagen poptop camper, 1969, $2200. 213-832-1684.

Oldsmobile 88, 1962, 4-dr., p/s, p/b, r/h, $175. 213-323-4389.

Van, 1972 Dodge 300 w/Car-A-Van conversion, fully equipped, $6500. 213-374-7747.

Ford, 1971 Torino 500, 4-dr. h/top, fact. air, p/s, 62,000 mi., $1725. 213-839-4553.

Sunbeam G.T., 1969 Fastback, 15,000 mi., $1850. 213-374-3716.

Olds-Cutlass, 1971 sport cp., fully equipped, 15,000 mi., $3000. 714-529-6354.

Model A, 1929, $1750. 213-329-9207.

Ford, 1971 Galaxie 500, country sedan sta. wagon, fact. air, 4-dr., 6-psgr., p/b, p/s, r/h, $2800. 213-754-0110.

Volkswagen, 1968 Squareback, $1100. 213-835-0717.

Plymouth, 1968 Fury III, 2-dr. h/top, V-8, a/c, p/s, r/h, $1250. 213-676-3550.

Volkswagen, 1969 custom camper, $1850. 213-374-4241.

Plymouth, 1972 Satellite, 2-dr. h/top, V-8, 318, p/s, a/c, 5000 mi., $3300. 213-671-2930.

Motorcycle, 1972 Honda 350 CB, 2500 mi., many chrome extras, $575. 213-374-8548.

Dodge, 1967, Coronet 500, 2-dr. h/top, auto. trans., p/s, a/c, r/h, 383 cu. in. V-8, $850. 805-643-6955.

Mustang, 1967, 2+2, 390, 4-spd., AM-FM, p/s, d/bks., $1050. 213-378-4676.

Chevrolet, 1965 Biscayne, 2-dr., auto. trans., r/h, $300. 714-842-5925.

Plymouth, 1969 Roadrunner, 440 6-pack, trans., extras, $1300. 213-676-1085.

Volkswagen, 1970 Safari camper, fully equipped, $3500. 213-677-7614.

Triumph, 1969 TR-6, 30,000 mi., $2050. 213-826-7518.

Motorcycle, 1971 Honda CB 350 cc, $450. 213-673-4890.

Motorcycle, 1972 380 Suzuki, 6 mos. left on warranty, $695. 714-546-2995.

Camper, 1967 Dodge ¾-ton, p/b, a/c, new eng. & trans., 11' Pilgrim w/monomatic, $3500. 714-847-0674.

Motorcycle, 1971 Husky, dirt, 250 cc, $800. 213-697-1424.

Datsun, 1967 411 sedan, new clutch & paint, $600. 213-530-3398.

Motorcycle, 1971 Norton 750 cc, 3400 mi., $1000. 213-376-9047.

Miscellaneous For Sale

Jointer, 4" Delta, $75. 213-329-9195.

Dryer, Duracrest, elec., all cycles, 4 yrs. old, $100. 714-633-5282.

Wedding Dress, size 10-12, white, long sleeve, 3 tiers & train, all lace, $50. 805-498-1235.

Bicycle, 26" girl's Steyer 3-spd., access., $35. 213-679-0876.

Golf Set, left-handed, 1, 3 wood & 3, 5, 7 & wedge irons, putter & bag, $30. 213-371-3758.

Boat, 23' sport fisher w/fly bridge, stove & icebox, 2 bunks, lake or ocean fishing, $1500. 213-373-3819.

Camper Shell, 1971, for Datsun pickup, 6x6 inside, 48" foam bed, extras, $175. 213-545-6168.

Pups, AKC poodle, white, small miniatures, $50 males, $75 females. 213-866-4104.

Refrigerator-Freezer, 19 cu. ft., 2-dr., coppertone, $70. 213-635-3619.

Crib, white, other baby items, $5 & up. 213-375-9397.

Crib, never used, drop side, spring, mattress, $20. 213-823-4093.

Tires, 2 750x16, 8-ply, & inner tube, $45. 213-378-3481.

Climber, child's, w/swing, $5. 213-675-8813.

Bed, Hollywood-type, dble., mattress, $30. 213-322-2364.

Stole, mink, $65. 213-370-7749.

Travel Trailer, 17' Dalton, elec. brakes, sleeps 6, $525. 213-676-1991.

Mag Rims, Chev., 4 8"x15, & 2 Goodyear tires, $95. 213-644-5926.

Bicycle, boy's full size, $10. 213-675-6206.

Golf Clubs, starter set, ladies, 4 woods, 4 irons, putter & bag, $30. 213-674-1400.

Kitchen Stove, elec., 1961, G.E., $60. 213-883-2258.

Typewriter, IBM Selectric, w/delegate typing element, $275. 714-847-4700.

Hair Dryer, Rilling prof., $12. 213-675-6020.

Sofa/Hide-A-Bed, May Co., queen size Sealy Imperial post-urepedic mattress, $275. 213-378-0463.

Accordion, 120 bass Contello, student size, case, $300. 213-676-7814.

Guitar, case, Yamaha FG-230, 12-string, $85. 213-831-5304.

Wheels, 4 8-lug split rim, w/7.50x16 used tires mounted, $20 ea. 213-371-2948.

Dinette Set, lge. table w/ext. leaf, 4 swivel chairs, $35. 213-324-6703.

Jeep Trailer, w/dump bed, $200. 714-530-7128.

Travel Trailer, 1971 Ideal, 22', fully self-contained, many extras, a/c, $3650. 714-637-7662.

Dishwasher, Westinghouse portable, top load, white, $20. 213-679-5212.

Magazines, National Geographic, from 1928 to present date, $200. 213-322-3129.

Hard Top, custom, for TR-250 Triumph, $100. 213-675-1000.

Kittens, Blue Point Siamese, $25. 213-477-1697.

Encyclopedia, 15 vols. 1881, $45, other items & antiques. 213-474-5726.

Wardrobe, lge., wood utility-type, 2' x 4' w. x 6' h., $20. 213-823-8694.

Snow Chains, fit VW & other small autos, $5 pr. 213-676-6449.

Motorcycle Tires, w/tubes, 3:25 3:50 × 19 & 4:00 × 18, used 3000 mo., $6 ea. or both for $10. 213-325-3057.

Stereo Tape Player, 8-track Home, $20. 213-379-3134.

Drafting Machine, Universal Boardmaster, $90. 213-329-9037.

Guitar, Gretsch Chet Atkins Country Gentleman, w/case, $350. 213-530-7939.

Pups, Irish Setter, AKC Reg., $150. 213-638-9224.

Divan, 8', $25. 213-677-7421.

Wheelbarrow, steel, $15. 213-757-6960.

Bricks, 200 plus, used, $.10 ea. 213-376-4831.

Vacuum Cleaner, Kenmore, $75. 213-671-0756.

Tables, maple, occasional 14" round, 2-tier, $5 ea. 213-541-3000.

Gun, Fabrique, 32 cal. auto., $35. 213-676-5787.

Boat, minisport, trailer, elec. start, 40 h.p. Merc., $600. 714-644-1195.

Bicycle, Steyer, 24" girls Sting Ray, $25. 714-993-2382.

Uniform, Cub Scout, size 8, $5. 213-372-5508.

Movie Camera, Kodak mod. M-18 super 8, elec. dr., pistol grip, $50. 213-941-1865.

Mini Bike, $40. 213-320-8365.

Boat, 17'6" Glaspar, 75 h.p. Johnson eng. 40 gal. gas cap., trailer, sleeps 2, fully equipped, $2250. 213-324-8640.

Bicycle, 24" balloon tire, girl's, $25. 213-370-2137.

Trailer, 2-whl., GMC truck bed, spare tire & whl., $60. 213-370-7353.

Dryer, Whirlpool elec., $50. 213-378-9722.

Miscellaneous For Sale

Sweater, black, w/fur around collar, worn twice, $35. 213-375-5237.

Chest of drawers, lge. white, $10. 213-645-7972.

Renault Parts, for complete dune buggy, $50. 213-821-9110.

Boat, 16' Glaspar, 75 h.p. McCullough motor, trailer, complete, $995. 213-672-1439.

Pool Table, std. size, slate top, inc. balls, rack, cue rack, 6 cues & hanging lamp, $400. 213-670-3713.

Trailer, 15' Scotsman, 1968, 3-burner stove, ice box, $635. 213-326-0916.

Pup, beagle, male, 15 mos., has papers, all shots, $30. 213-542-1049.

Electrikbroom, Regina, used once, $20. 213-644-3922.

Tent, Continental-style, 10½ × 11, all nylon w/alum. frame & cases, $75. 213-375-3790.

Record Player, Westinghouse, $10. 213-324-3250.

Crib, mattress, sheets, $20. 213-530-1191.

Cruiser, 21' fibreglass, trailer, elec. bks., VHF radio, Mercruiser i/o, complete, $3500. 213-322-6655.

Dinette Set, black wrought iron & red vinyl, 2 ext. leaves, 6 chairs, $35. 213-675-1842.

Piano, upright, modern walnut cabinet, $150. 213-696-7529.

Washer, Frigette portable, coppertone, 1 yr. old, $75. 213-675-3889.

Speaker Cabinet w/J.B.L. 15" D-130 spkr., 6' folded exp. horn, walnut, $175. 213-378-2127.

Wanted to Buy

Band Saw, small home workshop type. 213-375-1685.

Loading equipment for rifle cartridges such as powder scale, powder measure, sizing dies. 213-374-2915.

Dolls, old or new for personal collection. 213-675-8390.

Camera, 35mm single lens reflex, & access., in good condition & reasonably priced, Nikon, Mamiya/Sekor, or Pentax preferred. 213-378-1671.

Encyclopaedia of gardening, Time-Life, complete set, will also consider other Time-Life series. 714-527-1946.

Refrigerator, 10'or 12' cu. ft., used, under $50. 213-323-7625.

Shake Shingles, any amount. 213-328-3306.

Floor car jack, reasonable. 213-941-5549.

Free (To Be Given Away)

Pups, cockapoo & German shepherd, 2 females, 3 males, black & white. 213-830-6956.

Cats, all sizes, colors & genders, shots. 213-376-1396.

Dog, female German shepherd, 1 yr. old. 213-422-9022.

Dog, sheltie, male, 4 yrs. old. 213-378-1486.

Puppies, mixed Labrador & German shepherd, 7 wks. old. 213-377-4609.

Pups, German shepherd & sheltie. 213-889-8723.

Rentals Wanted

Motor Home, large, June 30 to July 8, call collect, 805-947-4315.

Personals

My sincere thanks & appreciation to all my Northrop friends & co-workers for the flowers & expressions of sympathy on the passing away of my wife. C. M. VANCIL.

Thanks to the many friends at Northrop for the retirement party & gifts. A. OUWERKERK.

My sincere thanks & appreciation to all my Northrop friends of the Electronics Div. for the gift & party on my retirement. FRANCIS J. TOLIN.

Mrs. Wolfe joins me in expressing my sincere thanks & appreciation to all our friends & co-workers at Northrop for the parties & gifts presented on the occasion of my retirement. FRED E. WOLFE.

The family of Joseph D. Sena would like to thank his many friends at Northrop for the flowers & many kind thoughts extended to the family following his death. MILDRED SENA, GENE, KAY, SUSAN & CATHY BROWN.

Ride Wanted, male, to Missouri or Western Arkansas, March or April. 213-676-1254.

BOOSTERS CLUB SETS MEETING

The Lawndale Boosters Club in conjunction with the League of Women's Voters is sponsoring a Know Your Candidates Night on March 26, at 7:30 p.m., in the Lawndale High School cafeteria.

Candidates running for office on the Centinela Valley School Board will be featured.

NRC BRIDGE CLUB

The NRC Bridge Club is holding meetings on the second and fourth Fridays of each month from 7:15 to 11 p.m. at the NRC Clubhouse, Aircraft Division.

Contact Ralph Westphal, commissioner, ext. 2001 for further information.

Personals

We would like to thank all of those at Northrop who made our retirement an event we will long remember. JOE & HELENE BLAIRE.

I wish to express my appreciation to everyone at Northrop for the cards, flowers & wonderful gift. LOU STOLLINGS.

Companion-attendant wanted for partially paralyzed woman in her home. For further details call 213-371-6084.

Our sincere thanks & appreciation for your expressions of sympathy on the passing of our beloved father & brother, Cashus E. Ackley Jr. & for the donation to the Arthritis Foundation. EARL CASHUS ACKLEY III, MR. & MRS. OZZIE KNUDSON.

We wish to express our gratitude for your kindness & warmth shown in the passing of our brother Robert Lee Brown. BEVERLY & MR. & MRS. THURMAN SHARP.

With sincere thanks & appreciation for the kindness shown me on retirement day. HANK HENDERSON.

My sincere thanks to all my friends for the party & gifts which made my retirement such a memorable occasion. THELMA RUMBO.

My wife, Evelyn, joins me as I thank you all for your gracious wishes of good luck in my retirement. PETE SHIPP.

The Al Kemper family wishes to thank Northrop Corp. & employees for their expressions of sympathy & kindness in our recent time of sorrow. MYRA KEMPER.

My sincere thanks to all of my Northrop friends & co-workers for the many expressions of sympathy on the passing of my father. IRENE ST. MARTIN.

The Robert Smith family would like to thank all those at Northrop for their kindness & help during the illness & loss of our husband & father. MRS. IRENE E. SMITH, ROBERT JR. & RENEE.

WANTED

Paperback and hard cover books for lending library for Northrop personnel on overseas assignments. Mail to Orgn. 8850, Zone 23, or call R.M. Brown, ext. 4004, Aircraft Division. Will pick up at any location.

NORTHROP NEWS

Vol. 31 **No. 3**

Published monthly by Northrop Corporation Employee Communications.

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Editor—Ventura Division ..... **Park Irvine**
Editor—Aircraft, Electronics Divisions ..... **Tom Quintana**
Editor—Precision Products Department ..... **Peter Goodall**
Correspondent—Architectural Systems ..... **Dale Albee**

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THE ABOVE PHOTOS were taken by E. H. 'Steinie' Steinmeyer, senior artist, Publications and Proposals, Electronics Division. In 1945 'Steinie' opened his own photo illustration studio in Los Angeles, later specializing in photo composites for veteran celebrities and newcomers to Hollywood. 'Steinie' spent seven years at his trade and decided that 12-14 hours a day, six and seven days a week, was too much in this profession. He then sold his business and joined Northrop in 1953. In the photo are such well-knowns as: Gene Raymond, Jeanette McDonald, Loretta Young, Hugh O'Brian, Warren Williams, Burl Ives, Edgar Bergen and Charlie McCarthy, Peter Potter, Moira Shearer and Sol Hurock, and some early photos of Norma Jean Doherty (Marilyn Monroe). See how many you can identify.

Service Pins Awarded to 13

During the month of March, 13 employees in the Electronics Division will have received service pins for 5, 15, 20, 25, and 30 years' service.

The lone 30-year pin recipient is Amos D. Adams, engineering technical assistant, who began his career with Northrop March 18, 1943, as an engineer on the N9M engines systems.

Mr. Adams

Other service pin recipients are: 25 years — John N. Morgan, engineering specialist; Macy T. McCarl, manufacturing associate; Joseph B. Immler, operations project liaison man; Preston C. Cox, special projects supervisor; 20 years — Robert N. Koerner, Ronnie W. Pearson, Tom R. Chapin; 15 years — Roy N. Gaston, Clarence H. Scott, Marvin L. Wanbaugh; 5 years — William T. Banks, and Mary E. Mills from Berkeley Scientific Laboratories.

TOPS

(Continued from Page 1)

rid circuitry occupies less than 10 cubic inches and weighs 11 ounces with a 30-watt power requirement.

In addition to the hybrid units, four TOP/20 Applications Units (TAU) are being developed to facilitate evaluation of the TOP/20. The first two TAU's will be ready for software development and preflight system testing by the end of March.

The TAU consists of two major components — the equipment cabinet and the teletype (Model ASR-33) consisting of keyboard, printer, paper tape punch and reader. The equipment cabinet contains a TOP/20 in an application evaluation configuration and a control and display panel to permit initiation of operation and technical diagnosis.

Current applications of TOPS include ECM pre-processors, navigation computers, fire control processors and use in conjunction with aircraft multiplex controllers. The devices have many applications in the modern trend toward digitally integrated aircraft avionics systems.

SHRINE CIRCUS

The Al Malaikal Temple has announced its annual Shrine Circus will be held April 13-17, in the Shrine Auditorium with reduced ticket prices to all employees for the weekend performances.

Deadline for obtaining tickets is Monday April 2, in Personnel Activities with prices set at $3 and $2.

The internationally reknowned Polack Brothers Circus will supply the entertainment with seven performances scheduled for Friday, Apr. 13, 8 p.m.; Saturday, Apr. 14, 10 a.m., 2:30 and 8 p.m.; Sunday, Apr. 15, 1 and 6 p.m.

Six Division Employees Cash in on Suggestions

Six members of the Electronics Division have walked away with cash awards totalling $443 during March as a result of their participation in the Suggestion Program.

Tony E. Amundson, environmental technician, was the large prize winner receiving $370 for his suggestion concerning high beam fixtures with adapters for the Shelter Program being conducted in conjunction with the U.S. Marine Corps.

Mr. Amundson's suggestion called for the installation of spreader beam fixtures to the underside of the rafter beams within the shelters so that a small M-71 crane which is part of the Marine Corps equipment inventory, could be used to disassemble the structure rather than a large crane.

His suggestion not only saved Northrop the cost of renting a large crane, but will enable the Marines to use their own manpower to assemble and disassemble the structures once they are in use without the aid of heavy equipment or additional civil engineering personnel.

Other award winners and their suggestions were: $25 — Cecelia Kenny, slip-proof stair covering; $15 — Thomas Grettum, non-slip ramp in ANS systems lab area; $13 — Joseph Watson, pin holding fixture; $10 — Mary McIntyre, bench in bloodmobile waiting area; $10 — D. L. Hatfield, dimensional adjustment aid.

TONY Amundson, right, receives check for $370, from his supervisor, Dave Bond, for suggestion on high beam fixtures on Shelter Test Program.

CAMPING CLUB

Camping Club members and their families and friends will venture to the Circle H Ranch March 30, for a weekend of outdoor enjoyment.

The Wanderers will be the only group at the ranch and will enjoy a potluck dinner in the recreational hall on Saturday, 5 p.m.

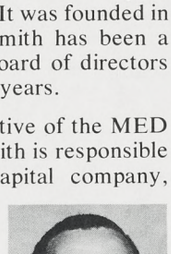
Contact Club Commissioner Frank McGinley, ext. 227, Hawthorne.

H.T. Smith on Leave to Green Power Foundation

Hollis T. Smith, project engineer, Avionics Development unit at the Hawthorne facility, is on a one-year leave of absence as director of a $1 million Minority Enterprise Development Program (MED) for Green Power Foundation (GPF) in Compton, Calif.

Green Power Foundation is an organization working for the development and ownership of black enterprise. It was founded in 1967, and Mr. Smith has been a member of the board of directors for the last three years.

As chief executive of the MED program, Mr. Smith is responsible for a venture capital company, which will initiate the development of five new enterprises to be established as minority businesses, and he will coordinate all activities involved in their development.



Mr. Smith

In coordinating these activities, Mr. Smith will make policy with respect to project operations, will be responsible for planning, organizing, staffing, directing and controlling the operations of headquarters and field components of the project, and will approve all new enterprises to be established. He will initiate or approve all promotions, demotions, personnel releases and changes in salary for the foundation's professional staff.

Mr. Smith will be working with business economists and investment developers with expertise in various business areas such as marketing, production, geographic location, and investment sources. He will also provide a national executive search function to locate key personnel for placement with the new companies.

Mr. Smith will be accountable for project results to the president of GPF, to the board of directors, and to the Office of Minority Business Enterprise (OMBE). Mr. Smith will return to Northrop in Nov. 1973.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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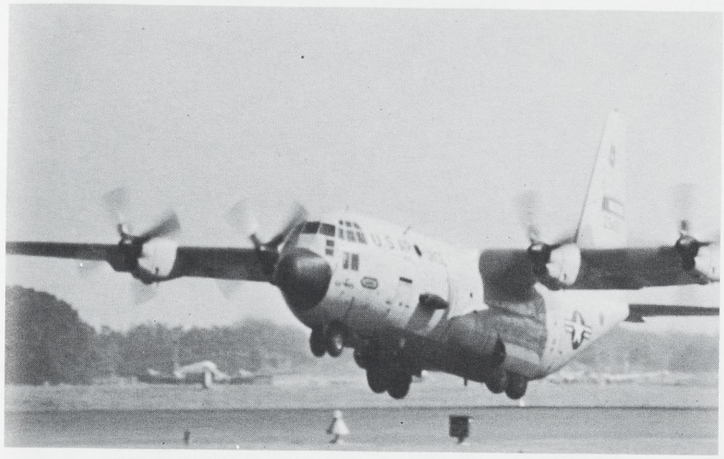


USAF Air Weather Service WC-130B houses the AWRS.

Western Facility People Exemplify Pride in Work

Assuring quality program requirements, especially in the area of precision measurement and calibration equipment, is the duty of 11 individuals of Standards and Calibration at the Western Avenue facility in Gardena.

Operating in their third year at the combination warehouse and laboratory facility, the team members are turning out from 800-850 units per month.

Supervisor William Banks pointed out that the comraderie, pride and professionalism exhibited by his section have contributed to the uniformity of measurement in the development, manufacture, and testing of company products in accordance with calibration system requirements.

Electronic and electro-mechanical measuring test equipment from Hawthorne, Palos Verdes, and Edwards AFB facility, are cycled through the laboratory on an exacting periodic basis.

Units are calibrated for resistance; capacitance; inductance; frequency; DC voltage; AC voltage/current; temperature, and phase angle, but are not calibrated until necessary repairs are performed.

Department members are: Carl Chapman, Antony Pasquale, Dave Perez, Carl Shuravlev, Leonard Tobias, and William Webster, Calibration technicians; George Hapsic, Standards Lab engineer; Harold Bertelsen, Standards Lab specialist; Helen Bean, Standards Lab assistant; and Robert Grimes, Standards Lab Support.

"We are currently improving our routine in such ways to cut the turnaround time even further. With the continued cooperation of those agencies we are serving, we will achieve this goal," Mr. Banks said.

Philharmonic To Entertain

An afternoon of refreshing open air concerts will be held Sunday, May 13, when the Peninsula Committee for the Los Angeles Philharmonic Orchestra presents the Peninsula Music Fair on the Chadwick School campus. All employees are invited to attend.

Zubin Mehta will conduct the Los Angeles Philharmonic Orchestra with concerts beginning at 11 a.m., followed by Gerhard Samuel conducting the LAPO for a youth concert.

Also featured will be the Monrovia Recorder Consort; Pete Christlieb Jazz Combo; Robert Herr Chorale; Philharmonic Wind Quintet; Philharmonic Trombone Quartet; Philharmonic String Quartet; Double Bass-Piano Duo; Palos Verdes H.S. Band; Billy and the Bachelors; T.L. Engelhardt, guitarist; Orchestra-soft rock; Costa Rican Dancers; African Dance Ensemble; and the Los Angeles Saxophone Quartet.

Electronics Systems Supplement AWRS

The Airborne Weather Reconnaissance System (AWRS), developed by Kaman Corporation, Bloomfield, Conn., under contract to the U.S. Air Force Electronic Systems Division, employs the world's first optimally integrated inertial-Omega navigation system.

This unique system, developed by the Electronics Division, uses the C-5A IMU (Inertial Measurement Unit), the ARN-99 NOLA II Antenna, and a modified ARN-99 Omega receiver/converter and control display panel. Northrop also supplies the computer program for the navigational computer.

AWRS is designed to provide increased data on the structure, internal forces and movement of tropical cyclones, lesser storms and other atmospheric phenomena with a level of accuracies previously unattainable, substantially improving the international storm warning system to reduce loss of life and property.

Preliminary flight testing of the AWRS' six major integrated subsystems, including the Northrop inertial navigation system, was completed by Kaman at Bradley International Airport, Windsor Locks, Conn.

The precision inertial navigator employing the Northrop-developed and built C-5A floated ball IMU bettered the free inertial specification requirement of 0.6 nautical mile per hour on its first flight in the C-130B with its rugged environment. This performance is based on terminal error measurement.

The AWRS navigation system uses a Northrop-developed 26-state variable Kalman filter to process the inertial and Omega data. A new technique to refine the Omega derived position to the accuracy required for effective integrated inertial-Omega perfor-

(See AWRS, page 8)

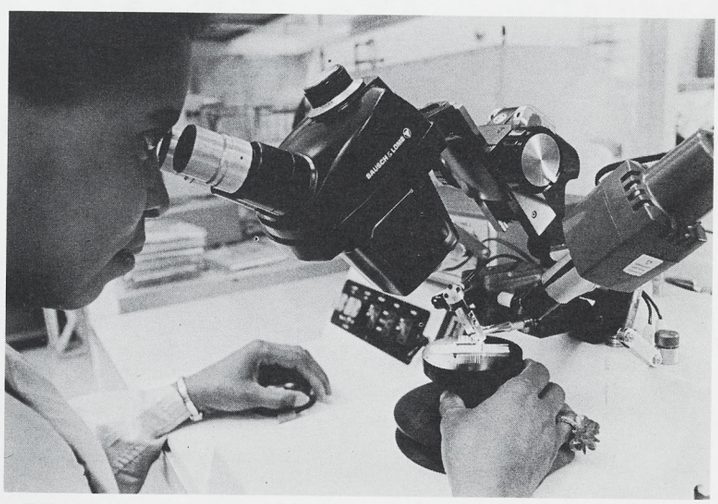
Division NRC To Hold Dance

A festive evening is in store for all personnel at the "Cinco De Mayo Dance" being held by the Electronics Division NRC Saturday, May 5, in the NRC Clubhouse on Crenshaw Blvd., Hawthorne.

Free drinks and door prizes will be given away with the music of Bill Stroub entertaining from 9 p.m. to 1 a.m.

Tickets are $3.25 per person and are now available at Personnel Activities or at the door.

Wear your sombrero and serape or come as you are!



A THOROUGH inspection is conducted by Lee Benton, foreman, second shift, Micro-circuit Laboratory, Electronics Division, Hawthorne, on a circuit turned out by the Hybrid Lab. Her efforts are indicative of the achievements the division has gained in the packaging of electrical systems with sophisticated components.

New Industrial Relations Posts for Faranda, Stuffler

Paul L. Faranda has been appointed Corporate director of Industrial Relations, according to an announcement by J. H. Bruce, Corporate vice president, Industrial Relations.

Mr. Faranda

Mr. Faranda was manager, Industrial Relations, Electro-Mechanical Division, before his appointment to the corporate position. He was succeeded at Anaheim by Richard (Dick) Stuffler, former division manager of Personnel Administration and Compensation.

In addition to his new corporate responsibilities, Mr. Faranda will continue to direct Industrial Relations for Northrop Services, Inc., on an interim basis with specific support furnished by the Electro-Mechanical Division.

Mr. Faranda joined Northrop in 1951 as one of the original employees of the Anaheim operations. Activity was still so new that his desk, as a department clerk, was in one corner of the construction company's field office.

Later he was promoted to head the Engineering Management Development office at the Aircraft Division, and subsequently served as Nortronics Division chief of Personnel Administration, and as manager of Employee and Industrial Relations for Hallicrafters in Chicago. He returned to Anaheim in 1969 as manager, Industrial and Community Relations for the Electro-Mechanical Division.

Mr. Faranda holds an M.A. degree in psychology from Occidental College and served with the Bureau of Naval Personnel in World War II.

Corporate Vice Presidency Title To Paul Wierk

Paul O. Wierk, manager of Data Processing for Northrop Corporation, has been appointed a Corporate vice president, George F. Douglas, Northrop senior vice president of Administration, has announced.

Mr. Wierk

In announcing Mr. Wierk's appointment, Mr. Douglas cited the "ever increasing importance and impact of the company's machine data processing on Northrop's business operations."

Mr. Wierk attended the University of Southern California and is a graduate of the University of California Executive Program.

BULLETIN

California car owners — "Operation Knock NOx" starts in July.

CREW HELPS astronauts don space suits at the NASA Lyndon B. Johnson Space Center in Houston, Tex.

Spacecraft Center Renamed In Honor of Lyndon Johnson

The Manned Spacecraft Center, Houston, Tex., has been renamed the "Lyndon B. Johnson Space Center" in honor of the late President, according to an announcement from the National Aeronautics and Space Administration.

In signing a Senate resolution on the name change, President Richard M. Nixon noted that as a Senator, President Johnson drafted, introduced and helped enact legislation creating NASA. He said that the late President called this "the proudest legislative achievement in his years in Congress."

Northrop has provided support for the center since 1964. This was done first through the joint venture of Brown & Root-Northrop and since January 1972 by Northrop Services Inc., a unit of the Electro-Mechanical Division.

Primary areas of support are:

• **Space Environment Simulation Laboratory** — The laboratory duplicates environmental conditions to which spacecraft, subsystems, astronauts and personal equipment are exposed during space flight. The laboratory houses two large manned and several unmanned space chambers. All components and materials of the nation's manned space flight programs are tested here for flight qualification.

• **Experimental Mechanics Laboratory** — Performs vibration and acoustic testing, tests metallic and non-metallic materials, and conducts destructive and non-destructive tests.

• **Crew Systems Laboratory** — Here Northrop personnel support manned and unmanned chamber tests of astronaut and spacecraft equipment and materials. They also evaluate biomedical samples and support crew systems instrumentation.

• **Thermochemical Test Area** — Here the support is component and materials testing of liquid propulsive, pyrotechnic and chemical subsystems under controlled conditions. Attitude thrusters, fuel cells and other spacecraft power systems are tested and flight qualified.

• **Lunar Receiving Laboratory** — Northrop personnel assigned to this important function provide scientific and technical services for the receipt, processing and evaluation of lunar materials.

Frank W. Lynch is president of Northrop Services, Inc., and William J. Oakes is vice president and manager of Operations. H.P. Claggett is NSI's manager at the Lyndon B. Johnson Space Center.

OAKES ELECTED

Northrop's William J. Oakes was elected president of The National Council of Technical Service Industries (NCTSI) at the organization's annual board of directors meeting.

Mr. Oakes succeeds P. Ray McInnis of Cordura Corporation.

The council represents 16 corporations, including Northrop, ITT, RCA, Bendix and Philco-Ford, that help provide $8 billion in support services to the government.

Mr. Oakes is vice president of Northrop Services, Inc., a wholly owned Northrop subsidiary operating as a unit of the Electro-Mechanical Division. He holds an M.S. degree in aeronautical engineering from MIT, and a master's of engineering degree from the UCLA Executive Program.

Other officers elected at the same time were Richard E. Jones of Raytheon, first vice president, and William E. Peugh of Computer Sciences Corp., second vice president.

Ventura Division Acquires Rights From McCulloch to Produce Target Engines

Northrop Corporation's Ventura Division and the McCulloch Corporation, have jointly announced the acquisition by Northrop of all rights to manufacture and sell the Series 4318 target aircraft engine formerly owned and produced by McCulloch.

According to W.E. Woolwine, Corporate vice president and Ventura Division general manager, the 4-cylinder, 2-cycle gasoline-powered engine previously had been furnished to Northrop by McCulloch for use in the Northrop-manufactured KD2R-5 (Shelduck) target drone. This target drone type has been in use by U.S. Armed Forces and those of 18 foreign nations for more than 20 years.

The engine was the first product to be manufactured by McCulloch after their relocation in Southern California in 1945. Now, McCulloch is one of the world's leading chain saw manufacturers.

Under terms of the acquisition, Mr. Woolwine said, Northrop has purchased exclusive design, manufacture, and worldwide sales' rights for the engine series. Initial production of engines is under way at the Ventura Division.

No dollar figures for the acquisition were announced.

The Ventura Division is a multi-faceted industrial complex where high technology products are developed and produced for both industrial and government use.

First F-5E Delivered Four Months Early

International Fighters Meet Cost and Performance Specifications

Northrop delivered to the U.S. Air Force the first of the new F-5E International Fighters four months ahead of the original schedule. The aircraft delivered to Williams AFB, Ariz., April 6, meets the original cost and performance specifications established by the USAF.

The USAF will use the first 20 aircraft to train pilots from those countries who have selected the F-5E as their air defense arm in the coming years.

The aircraft is the seventh production model off the assembly line; the other six F-5E's are in various stages of pre-planned flight test. Average flyaway price of the F-5E is approximately $1.6 million.

The F-5E, known as Tiger II, is the second in the series of Northrop high performance lightweight fighters, following its predecessor, the F-5 Freedom Fighter. Tiger II, which is designed to combat the MIG-21 and provide Free World nations with air superiority over their own territories, has become increasingly important to the United States aerospace industry in terms of employment and balance of trade.

Northrop already has program commitments from a number of countries totaling more than 450 Tiger II's. The company expects total sales to surpass the 1,000 mark. This total could exceed the nine-year production record of the F-5 Freedom Fighter, now in service with 17 nations around the world.

At the peak production rate, which the company expects to reach in mid-1975, the Tiger II program will support more than 20,000 jobs across the United States. This includes jobs at facilities of subcontractors and suppliers directly supporting the F-5E and in other jobs created by the program. Northrop facilities in Southern California will have more than 3,600 employees working on the F-5E program.

The Tiger II has significantly higher performance than the company's F-5. This includes greater maneuverability, greater range, shorter takeoff distance, and increased speed and payload. In addition, the aircraft is equipped with a new integrated fire control system. Its armament includes two internal 20 mm automatic guns and two Sidewinder missiles. In addition to its inherent air-to-air combat capability, the F-5E is equally effective for ground attack missions.

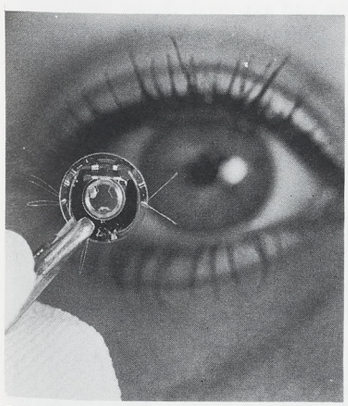
NORTHROP'S FIRST F-5E Tiger II was delivered to the U.S. Air Force at Williams AFB on April 6. Lt. Colonel Jack Gale, commander, 425th Tactical Training Squadron, climbs out of the cockpit after ferrying the plane from Palmdale. Welko E. Gasich, vice president and general manager, headed a contingent of Aircraft Division representatives that joined squadron personnel and their families who were on hand to greet the new arrival at the Arizona air base. The 425th TTS held an Open House in conjunction with the first F-5E delivery to the unit.

Two Die in NASA Sunnyvale Crash

Two employees of Northrop Services, Inc., were aboard the NASA 990 Convair "Galileo" that collided with a Navy jet at Sunnyvale, April 12.

They were Roy Adkins, check pilot, and Clay Robinson, technician. They were participating in airborne sciences experiments under a Northrop Services, Inc. contract to NASA at the Ames Research Laboratory, Moffett Field, Calif.

"Roy Adkins had been a Northrop employee for six years and Clay Robinson had been with us since 1959," Ad Herron, manager, Northrop Services, Inc.'s Western Operations, said. "They were both outstanding employees and their loss will be deeply felt both professionally and personally by all of us at Northrop."



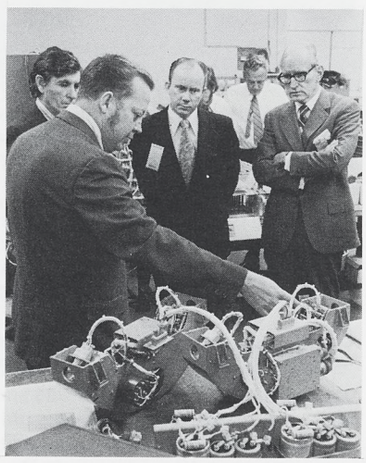
DEVELOPED OVER a two-year period at PPD, a new monolithic quartz crystal designed for pendulous type accelerometers makes possible a substantial reduction in the device's size while at the same time improving its accuracy. The crystal approximates the size of the pupil of the human eye.

BIDLAKE APPOINTED

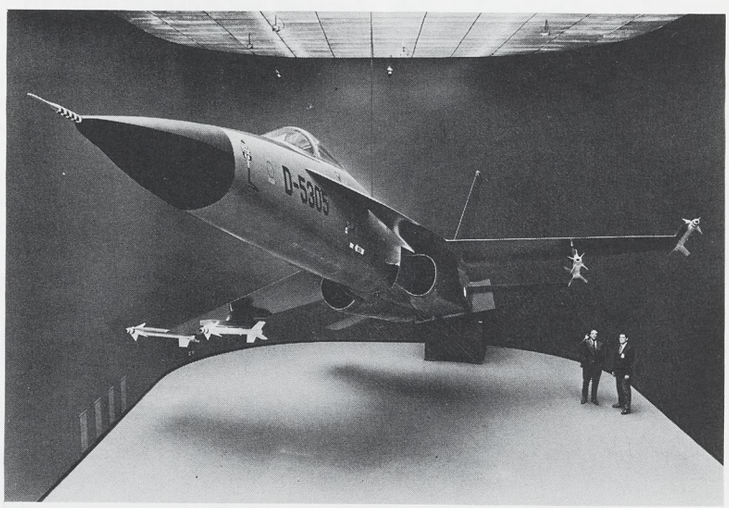
John Bidlake has been appointed Corporate director, Compensation, it has been announced by J.H. Bruce, vice president, Industrial Relations.

Mr. Bidlake comes to Northrop from the British Columbia Telephone Co., Vancouver, B.C., where he served as employment manager and director of Personnel.

Mr. Bidlake attended the University of Portland, Portland, Ore., and the California State University at San Jose.



MARK 30 Underwater Target electronics gets attention from Orville Kyler, manager, Marine Systems Engineering, left; Capt. W.C. Dotson, director, Torpedo Systems Division for the U.S. Navy, center, and W.E. Woolwine, Corporate vice president and Ventura Division general manager, during visit of Captain Dotson and Navy personnel recently. A two-day Mark 30 Program Status Conference was held with key division and Navy personnel involved in the program.



NORTHROP CORPORATION'S Cobra multinational tactical fighter weapon system will be displayed publicly for the first time at the 30e Salon de l'Aeronautique et de l'Espace, Paris - Le Bourget. This 53-foot long, full-size engineering model of the Cobra will be unveiled to the press at 1100 hours on Press Day, May 24, at Stand 200 Hall C and will be on display throughout the Salon. The detailed Cobra model has never before been shown outside the Aircraft Division. The Cobra weapon system has been designed by Northrop to be developed and produced in a cooperative program with European and other aerospace industries.

Northrop AID Contributions Up $15,000

Northrop employees have once again gone over the top in their annual AID-United Givers campaign which saw contributions upped by $15,000 from last year.

Participating in its 18th campaign since 1955, Northrop has contributed a total of $4,436,352 for the support of hundreds of health and welfare programs in Los Angeles, Fresno, Riverside, San Diego, Stanislaus, Kern, Orange, San Bernardino, San Luis Obispo, Ventura and Imperial counties as well as other home-communities throughout the United States.

A total of $255,000 was reported by the director of the AID drive for Northrop, Marie Tully, with the Aircraft Division pledging $164,750; Electronics $31,500; Electro-Mechanical (Anaheim) $34,500, and Huntsville, Ala. $6,000; and Corporate offices $18,250.

BEAN LECTURES

David J. Bean, manager, Proposal Department, Aircraft Division, was one of the featured speakers at the recent meeting of the American Management Association held at the Ambassador Hotel.

Mr. Bean gave a lecture concerning a Case Study in Project Management.

BUCKLE DOWN

DOING HER BIT FOR SAFETY is Chris Chavez, Electro-Mechanical Division, who is placing the California Highway Patrol's bumper sticker urging motorists to use their seat belts. The stickers are available from Personnel Activities as a public service of Northrop.

TIME TO CHANGE and Ventura's Sherrill Ashworth moves the hands of one of his many clocks ahead one hour for Daylight Saving Time which starts Sunday, April 29. The French clock he is changing is one of a number he has on consignment at Time and Chimes in Port Hueneme. In rear, Jan Witherell, shop owner, changes the time on Mr. Ashworth's grandmother clock.

Time Change—Clocks to Spring Forward April 29

Hickory, Dickory, dock–
The spring that runs the clock.
Will soon strike the time,
but gosh, will it chime
one hour ahead–
For Daylight Saving Time?
(With apologies to M. GOOSE)

Ventura Division's Sherrill Ashworth twice a year finds himself in the predicament of a man wishing he had more hands.

When the time comes for Daylight Saving Time, Sherrill must move ahead one hour the hands on approximately 100 clocks and watches.

In the three years he has been buying and selling clocks and watches, he has gained quite a collection of timepieces. Right now he has some 29 clocks ranging from mantel models to a 7 foot, 6 inch tall grandfather clock worth $4,000. Other clocks range in value from $75 up. In addition, he collects pocket watches and usually has between 65 and 70 ticking away. These range in value from $35 to $600.

"All my clocks are in good running condition," Sherrill said, noting his hobby is both interesting and profitable.

They also take time and right now Sherrill is busy setting them one hour ahead to reflect the start of Daylight Saving Time on Sunday, April 29.

ICE CAPADES

Northrop Night at the Ice Capades is set for Saturday, May 5, with special rates for employees and their families.

Tickets for the 5 p.m. showing are $4 for adults, and children 18 and under $2.50. Contact Personnel Activities.

The 1973 edition will be held at the Los Angeles Sports Arena.

SAVINGS BONDS CAMPAIGN STARTS SOON

The First Annual Physical Sciences Symposium Set

The first annual Physical Sciences Symposium sponsored by the California Museum of Science and Industry and Northrop, will be held Thursday, May 3, at Exposition Park in Los Angeles.

Entitled "Frontiers of Science—1973," the day-long symposium will be attended by high school science students throughout Southern California.

Northrop Research and Technology center personnel participating in the event are Bob Johnson, assistant for Marketing, serving as symposium coordinator; Dr. Donavon Pretzer, director of Technology, Analysis and Plans, serving as committee co-chairman; and Dr. Gary H. Glaser, conducting a seminar on "The Missing Third Dimension."

Magic Kingdom Invites Employees

With the advent of Spring and Daylight Saving Time, it signals the arrival of one of the highlights of the Northrop Recreation Club schedule of events; the 10th annual NRC Night at Disneyland scheduled for Saturday, May 19, from 8:30 p.m. to 1:30 a.m.

All the magic and gaiety of the Magic Kingdom will be the exclusive realm of employees and their families for the reduced price of $4, with children 2 years and under, admitted free.

In addition to unlimited use of all attractions (shooting galleries excepted), NRC members will be entertained by live bands in different locations of the park, plus dancing and assorted shows.

Contact Personnel Activities for your reservations as no tickets will be sold at Disneyland.

DISNEYLAND's big-eared host, Mickey Mouse, will be on hand to greet Northrop employees and their families on May 19.

Bell Draws Pictures to Get His Point Across

If you have to draw a picture for someone to help them understand a point you're trying to get across, then Noel Bell, senior designer, Electronics Division, would be the man to consult.

Mr. Bell's talent for putting words into pictures has brought him praise and recognition from organizations in over 30 states including Alaska and Hawaii.

Expert in the Field

His pictures deal with the architectural barriers confronting paraplegics, amputees and other people confined to wheelchairs. Mr. Bell is a firsthand expert in the field because he has been confined to a wheelchair all his life.

Mr. Bell and his family came to the U.S. in 1966 from England. He began working for Northrop the same year.

Wherever they went in America, he noticed that handicapped people, especially those in wheelchairs, were not being considered when public-used facilities were designed.

Telephones, drinking fountains, bathroom fixtures, access ways, parking spaces, were all constructed with the upright normal person in mind.

It was in 1968 when Mr. Bell got a chance to begin doing something about their plight.

While attending an art exhibit, Mr. Bell was introduced to Mick N. Spencer, who is the regional director of the California Association of the Physically Handicapped and member of the Paralyzed Veterans of America. Mr. Spencer is a quadraplegic.

It wasn't long before they both realized their mutual interests in the architectural barriers field.

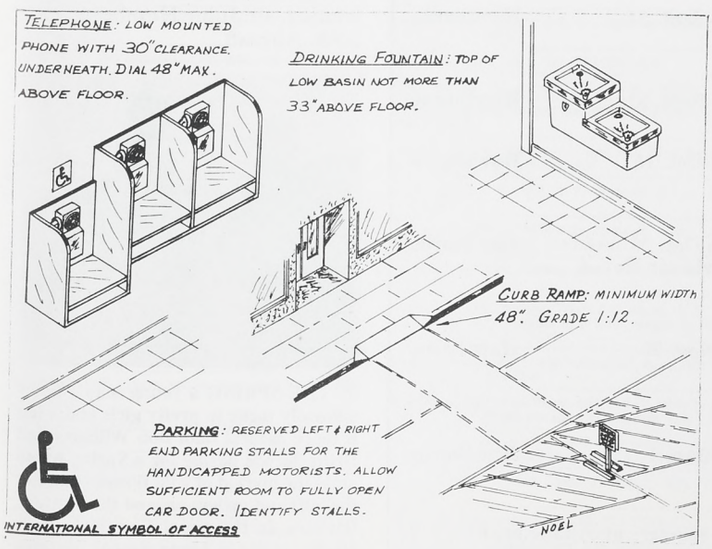
"I found it incredible that no one had come up with designs or illustrations of any kind for this little known field," he reflected. "All I merely did was use my drafting skills to express our ideas in terms that designers, city planners and like officials could use."

When Mr. Spencer began sending out the drawings to the departments within his association the response was almost immediate. Additional copies were requested by every agency within the organization including the President's Committee on Employment of Handicapped People.

Touring the City

Becoming further involved in the plight of handicapped citizens, Mr. Bell took a councilman from the city of Fountain Valley, where he resides, on a tour of the city to show him the inconveniences a handicapped person encounters while trying to lead a normal life. It took a very short while of looking for special parking spaces; climbing up and down curbs at crosswalks; and numerous other incidental tasks made into major chores for a wheelchair-bound person before the councilman realized that legislation was long overdue concerning disabled people.

"It is about time that the handicapped person was allowed to participate in society on a more equal basis. If my drawings are the key to achieving that goal I will continue in this capacity as much as I can," said Mr. Bell.



SOME OF the drawings made by Noel Bell are shown here depicting areas that handicapped persons could be using if proper corrections were made.

MUSTANG MEMORIES were relived by W.C. Athas, left, and C.D. Hauver when Mr. Hauver visited the Ventura Division for talks on air-cushion landing systems for RPV's. Mr. Athas is a member of the division's Customer Requirements staff while Mr. Hauver is Marketing manager for Bell Aerospace Systems. Both men served in the U.S. Air Force together and flew P-51 Mustangs together during World War II.

Gay's Hobby Takes Him To Far-Reaching Places

Hobby is defined as an engrossing topic or interest which one constantly reverts or gives his spare time to.

Leo Gay, senior engineer, Advanced Design, Aircraft Division, to say the least, is engrossed in his hobby — the restoration of antique airplanes.

Leo's hobby has led him to the jungles of Malaysia and the Philippines; the barren wastes of Australia's outback region; the coral reefs of Guadalcanal; the far reaches of Afghanistan; the searing heat of India; and the snow-covered regions of the Yukon.

Why? Because Leo is one of those rare breed of "wind in your face . . . seat of your pants" aviating enthusiasts that is rapidly bringing grass roots aviation back to the front among flying circles.

He began this activity in 1965 by bringing in several DH-82 Tiger Moths from Clark AFB, Philippines, one for himself and the others for movie star Cliff Robertson.

But once his "bipes" were observed and discussed at air shows around the Southland, the orders began pouring in for rescue missions to recover all kinds of aircraft ranging from a Jap Zero in Guadalcanal to two Martin B-26's in the Yukon.

Leo located his own 1928 60 G Gipsy Moth in Australia in 1968. It was the sole survivor of 32 built in that country in 1928-29, and required very little work to restore it to flying condition.

Altogether Leo has imported about 15 Tigers and Gipsys to date with their owners scattered from Bloomfield, New York, to Miami, Florida, to Santa Paula, California.

Because of his extensive background in working with air shows, Leo has served as director of flying for the Long Beach Sea Festival Air Show; the Torrance Air Show; and the 1972 Mojave Air Show.

Leo is currently trying to recover a Hindustani (Indian-built) aircraft from Accra, Ghana.

His Royal Highness Prince Ghazi of Afghanistan is currently trying to persuade his government to release a Hawker Hind Biplane to Leo to be restored in Afghan Air Force colors.

The orders continue to reach Leo at his Glendale residence so undoubtedly his hobby will keep him busy for many months to come.

LEO GAY poses proudly in front of the only remaining Australian Gipsy Moth. He recovered it from the outback region of Australia in 1968.

ANCIENT INDIAN artifacts known as petroglyphs found in the Mojave Desert by Christina Mutch.

IN MOJAVE DESERT

Indian Artifacts Found

When Christina Mutch, 19-year-old daughter of Robert Mutch, Aircraft Division Model Shop, took an interest in ancient Indian artifacts, she decided to do more than study books and pictures on the subjects — she went directly to the best source of information available.

Through the auspices of the Museum of Natural History, a caravan was formed to explore the Coso Range in the Mojave Desert, and an eager Miss Mutch participated, for this was the site of some of the oldest Indian rock carvings to be found in North America.

Known as petroglyphs, some of these drawings date back to 1500 B.C. with over 14,000 of them speckling the boulders and canyon walls.

Petroglyphs were made by scraping a pointed rock onto a reasonably flat surface of brown-black patina boulders containing a mineral called basalt. When pieces of the boulders are scratched or chipped away, the moisture changes the basalt into a light brown color.

Miss Mutch noted that some of the drawings looked like they had just been carved, where in actuality the most recent of them were at least several hundred years old.

"The petroglyphs varied in subject matter and shape with an obvious transitional change of eras discernible from one area to another. On the older west side group, animals and men were generally the same size with the men depicted with stick-like bodies. But on the east side, or newer drawings, animals were both large and small and depicted running as well as standing still. One drawing pictured dogs attacking sheep."

Miss Mutch's biggest thrill of the excursion came unexpectedly when she was walking on the west side of the canyon and happened to pick up a small rock.

"I turned it over and discovered it was a piece of a petroglyph," she said. The guide identified it as a true petroglyph.

Comment . . .

I've heard that the Veterans Administration is paying a new dividend on GI insurance as a result of a recent law passed by Congress. What do I have to do to get this dividend?

R. K. Hess
Electronics

Inquiry to the Veterans Administration resulted in the following reply: A false and misleading rumor sweeping the nation is plaguing us at the Veterans Administration and leading hundreds of thousands of veterans such as you to write us requesting dividends on lapsed GI insurance based on service in World War II.

Congress has not passed a law giving all World War II veterans a 50 cents per $1000 dividend on GI policies. We have not requested veterans to write us regarding such a dividend. It is a hoax.

The only dividends that we are currently paying are to World War I and World War II veterans who have continued their Government life insurance in force. These dividends are paid on an annual basis and are distributed on the anniversary date of the policies.

You will do us a real service if you pass along to your friends and associates the information we have just given you.

I understand there was a telephone number I could call to report information on drug sales or pushers. Is that number still in use?

Unsigned

Yes, it is. The Heroin Hotline, created and announced by President Nixon last fall, has been of great assistance to narcotics law enforcement, according to Volney V. Brown, Jr., regional director of the Federal Office for Drug Abuse Law Enforcement (DALE).

Citizens are encouraged to call the toll free number, (800) 368-5363, from any place in the continental United States, any time of the night or day, any day of the week, to report leads to narcotics trafficking. Information concerning possession, sale or distribution of heroin, cocaine and other hard drugs particularly is solicited, according to Mr. Brown.

Those who call may, if they wish, remain anonymous. They may relate facts within their knowledge without giving their names, addresses, telephone numbers or other identifying data.

Heroin Hotline tips are immediately investigated, and many have resulted in the investigation and arrest of major offenders.

Letters should be addressed to "Comment, Northrop News, 170/40."

TRAVEL CLUB SCHEDULE

Tour	Departure and Return	Sponsor
Iberian Circuit—Granada, Tangier, Seville, Lisbon, Madrid, $668 plus taxes	Aug. 18-Sept. 2	Anaheim
Airfare Only—Los Angeles-London-Los Angeles, 22 days, $239	Aug. 31-Sept. 21	Hawthorne
Europe—Highlights Tour, 22 days, $969	Aug. 31-Sept. 21	Hawthorne
Portugal, Spain and North Africa—23 days, $969, all meals included	Sept. 23-Oct. 15	Hawthorne
Mexico/Sitmar Cruise Puerto Vallarta, Mazatlan, Acapulco, 10 days $466 and up	Via ship Oct. 26 Return via air Nov. 4	Hawthorne
Orient Adventure Japan, Taiwan, Thailand, Bali, Singapore, Hong Kong $1179, 22 days	Nov. 4-Nov. 25	Hawthorne
Mexico at Christmas Mexico City, Taxco, Acapulco, $495	Dec. 22-Jan. 1	Hawthorne

For further information call Jack Kinzer, at Anaheim, ext. 437; Jeanne Andrecht at Electronics (Hawthorne) ext. 542; or Dave Carney at Aircraft ext. 2486.

CLUB OUTING

Camping Club members and their families will journey to the Tucalota Springs Trailer Park in Hemet the weekend of Apr. 27.

Reservations are $6 per unit and may be obtained by contacting Frank McGinley, ext. 227, Electronics, or John Homberg, ext. 2168, Aircraft.

IN THE SPRING a young man's fancy naturally turns to pretty girls and what is more natural than Bob Williams and Diane Jacobs posing for a Spring photo amid the myriad of wild flowers that dot the hills and valleys around the Ventura Division in the rural Conejo Valley. Diane works in Management Systems while Bob is a member of Arts and Graphics.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. California Operations deadline: noon, second Wednesday of month. Precision Products deadline: to Connie Nelson, first Friday of month.

Vehicles For Sale

Mustang, 1969 Fastback, 4-spd., V-8, r/h, $1395. 213-423-1363.

Station Wagon, 1968 Opel, 100 h.p. eng, 53,000 mi., $650. 213-375-0493.

Van, 1972 Dodge 300 w/Kar-A-Van conversion, fully equipped, $6500. 213-457-9600.

Model A, 1929, all orig. $1750. 213-329-9207.

Volkswagen, 1964 Square Back, rebit. eng. & trans., $600. 213-325-2292.

Volvo, 1965, station wagon, a/c, radio, $1250. 213-375-7550.

Olds, 1967 Delta 88, h/top, 4-dr., a/c, radio, $750. 213-679-1011.

Datsun, 1967 411 sedan, new clutch & paint, $575. 213-530-3398.

Motorcycle, Honda Trail 90, hi-lo range gears, $135. 714-539-5812.

Olds, 1967, 2-dr., h/top, fact. a/c, p/s, p/b, $725. 213-377-7913, 213-329-0328.

Chevrolet, 1965 Impala, 2-dr., V-8, p/s, 48,000 orig. mi., $525. 213-398-0377.

Station Wagon, 1966 Chev. caprice, fully equipped, $850. 213-249-2662.

Sunbeam, 1964 Alpine, new top, extras. $250. 213-372-7018.

Volkswagen camper, 1965, Sundial outfitted, $895. 714-637-4723.

Plymouth, 1969 Fury III, 2-dr. h/top, a/c, r/h, 44,900 mi., $1600. 213-675-6331.

Buick, 1967 Riviera, a/c, full power, $1500. 213-370-0628.

DeSoto, 1949 2-dr. club cpe., $450. 213-677-5033.

Mercedes Benz, 1970 280S sedan, fully equipped, $5150. 805-642-0689.

GTO, 1967, p/s, p/b, a/c, $895. 213-634-9172.

Chevrolet, 1970 El Camino, 350 eng., a/c, radio, p/b, p/s, $2300. 213-321-5203.

Pickup, 1963 G.M.C., 1969 Aeroflite camper, 8′ full cabover, $1295. 213-370-6896.

Ford Pickup, 1960, ¾-ton, Horton cabover camper, sleeps 4, gas stove & refrig., $800. 213-676-5958.

Mercedes 220S, 1961, $1000. 213-374-3716.

Station Wagon, 1965 Olds Vista Cruiser, 9 pass., p/s, p/b, a/c, $850. 213-378-2790.

Motorcycle, Yamaha LTMX 100 cc, 16 h.p., 3:50 tires, car racks, $495. 213-370-0824.

MGTF, 1954, $1500. 213-266-3999.

Chevrolet, 1970 Malibu cpe., 350 eng. turbo trans. a/c, $2375. 714-847-5938.

Mustang, 1965, htr., auto., p/s, $600. 213-676-2721.

Jaguar XKE, 1964 roadster, $1300. 213-530-0379.

Mercedes Benz, 1966 230S, p/s, p/b, sun roof, $1800. 213-376-4641.

Chrysler, 1955 Imperial, p/w, p/b, p/s, $250. 213-370-7128.

Cadillac, 1968 De Ville h/top, fully equipped, $2125. 213-888-9213.

T-Bird, 1965, 1-owner, $600. 213-545-3844.

Fairlane 500, 1964, 2-dr. h/top, $350. 714-871-7625.

Dodge, 1969 window van, 6 cyl., manual shift, $1495. 213-677-6926.

Pickup, 1954 Ford, w/camper shell, 390 V-8, auto. trans., mags, $495. 213-323-3801.

Miscellaneous For Sale

Typewriter, portable type, Royal-Century, never used, carrying case, $25. 213-328-0887.

Organ, Conn Rhapsody model, dble. keyboard, $750. 213-377-1486.

Table Saw, 8″, cutters, sander, and 1 h.p. motor, $95. 213-679-6672.

Rug, bearskin w/head, 7′ long, white Polar Bear, $1000. 213-532-6675.

Backpack Tent, 5x8, w/fly, 5½ lbs., incl. stakes, used once, $50. 213-346-9701.

Tires, 5 mud & snow, mounted on rims for a Toyota Land Cruiser only, $200. 213-635-7843.

Pups, English springer spaniel, liver & white, 9 wks. old, AKC, $60 ea. 714-774-4458.

Utility Trailer, 4×6′, top is a table, $80. 213-326-0206.

Miscellaneous For Sale

Dining Set, Thomasville, incl. round table w/extra leaves, 6 uphol. chairs & buffet, $395. 213-674-6959.

Piano, baby Wurlitzer, walnut, $250. 213-323-0474.

Washer, Frigid., white, $50. 213-378-2609.

Aquarium, 10 gal., complete equip., $15. 213-327-6918.

Organ, combo. portable, w/2 lge. spkr. cabinets, many extras, custom blt. for pwr. sound use, $600. 213-696-7529.

Golf Clubs, ladies starter set, 1 & 3 woods, 3, 5, 7, 9 irons, putter, Spalding Victor w/bag, $30. 213-674-1400.

Tent, 9′×16′, Sears, 3 folding cots, Sears 2-burner stove, Coleman lantern, $100. 213-371-0136.

Boat, 15′, 35 h.p. Evinrude motor, elec. start, American brand trailer, all extras, $500. 213-398-8111.

Refrigerator, 19″ Admiral, bottom freezer, coppertone, 6 yrs. old, $70. 213-635-4087.

Range, Tappan, 36″ gas, thermogrid griddle, stor. space, $60. 213-324-9130.

Bicycle, 20″, girl's, $20. 213-322-6655.

Furniture, $5 & up. 213-375-9397.

Ski Boat, 14′ Fishback, 75 Evinrude out/bd. trailer, $600. 213-370-3886.

Boat, 16′ inbd. fiberglass hull, never used, $200. 213-837-2942.

Boat, 16′, 100 h.p. Mercury outbd., trailer, $650. 213-641-1332.

Barber Chair, & barber shop equipment, $90. 213-679-3958.

Bicycle, girl's 20″, $25. 213-833-7819.

Kittens, Balinese, w/papers, have shots, $25. 213-325-8559.

Washer, Kenmore, needs some work, $45. 213-644-3742.

Pups, collie, AKC, champ. sired, $75. 213-791-1636.

Projector, Sawyer 500R, 44 slide trays, & circular tray w/cases, $35. 213-430-1492.

Wheelchair, Everest & Jennings, $85. 213-294-0727.

MGB Boot, 1962-'67, covers top only in dn. position, $10. 213-379-7634.

Tent, umbrella type & 2 cots, $40. 213-644-2989.

Recliner Chair, black vinyl, $30. 213-329-9195.

TV, Magnavox, 19″ color, portable w/stand, $250. 213-939-8053.

Harvest Table & benches, 60″×40″ full size, side drop leaves, maple, $75. 213-833-6814.

TV, color, 24″ walnut console w/color antenna, $85. 213-676-6352.

Encyclopedia Set, World Book, 1962 ed. w/year books, $100. 213-326-5566.

Amplifier, Sansui 5000A & Sansui SP2000 4-way, 6 spkrs., $450. 213-322-1484.

Pups, German Shepherd, purebred, AKC reg., avail. May 6, $100. 213-882-0761.

Bicycle, girl's, 26″, balloon tires, banana seat, $25. 213-672-4794.

Love Seats, 2, $15 ea. 213-675-8007.

Bed, dble., Colonial style, mattress & box spring, hardwood frame, $65. 213-530-3666.

Water Softener, Culligan, auto., $100. 213-679-5212.

Tires, 2 775×14″, blk. & wheels, $10 ea., other items. 213-384-5962.

Range, gas, Gaffers & Sattler, $35. 213-378-9722.

Sewing Machine, portable, w/attachs., $35. 213-677-7421.

Freezer, Amana upright, 3 ft. sq., holds up to 900 lbs., $175. 213-675-0858.

Dog House, med. sized, $10. 213-675-1000.

Table, Formica top, 4 chairs, $30. 213-675-6020.

TV, Zenith portable, remote control, b&w, w/stand, $75. 213-322-3129.

Camera, 35 mm, Minolta A-5, lens 2.8, 45 mm, case, other access., $35. 213-396-5837.

Rims, 5 8-lug 9.50×16.5 for ¾-ton truck, $10 ea. 213-371-2948.

Stereo, Panasonic, AM/FM radio, turntable, spkrs., complete set, 1 yr. old, $90. 213-325-8932.

Drum Set, complete, Ludwig cases, extras, $300. 213-320-4187.

Camping Trailer, Kreuger Travel-Aire Viking, 5′4″ h., 5′3″ w., 8′ long, expands to 8′×10′, sleeps 4, many extras, $500. 213-861-7035.

Drums, complete set, Ludwig Professional, cases, cymbals inc., $350. 213-374-7598.

Wedding Gown, George Mauer, orig. size 10, off white-silk organza & lace w/long sleeves & chapel train, $40. 213-375-4312.

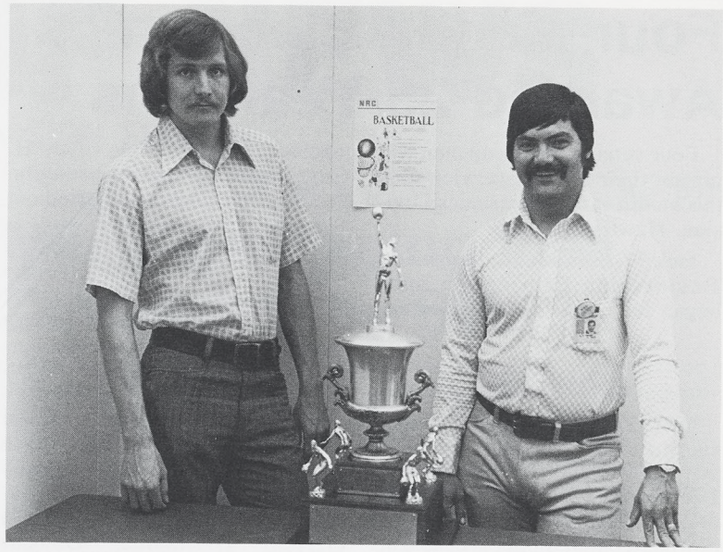
Bicycle, Schwinn Fair Lady sting ray, $25. 213-675-7965.

Pony, gelding, 8-yr-old Shetland, w/tack, $75. 213-329-1222.

Bumper Rack for motorcycle, $15. 213-372-3827.

China, Noritake goldart pattern, 8 pl. settings, 100 pcs., $175. 213-376 -4831.

Club Chair, black naugahyde uphol., $65. 213-325-5245.



DISPLAYING THE trophy all four divisions of Northrop's Southern California operations competed for are, left, Gary Van Winkle, forward on the Aircraft Division basketball team, and Ron Fisher, NRC Basketball commissioner. The May issue will have complete results of the first annual all-Northrop Basketball Tournament.

Miscellaneous For Sale

Car Carrier, 42″x42″, vinyl, $15. 213-378-1486.

Washer, Kenmore, $50. 213-379-2980.

Vase, cut glass antique, $35, other antique crystal & china. 213-474-5726.

Sprayer-Compressor, Sears elec. 1 h.p. 2 cyl., 12 gal. air stor. tank, 6 mos. use, $120. 213-374-8548.

Freezer, Kelvinator, 20 cu. ft. compartment, $100. 213-378-9660.

Sofa, 90″, Lawson style, $40. 213-330-7330.

Lapidary Equipment, trim saw, cross feed vice, other access., $275. 213-320-8297.

Sewing Machine, Universal, in cabinet, $40. 213-676-4272.

Gold Dredger, 4″, ready use w/diving gear & other access., $500. 213-287-3533.

Ventilating Fan, 8″ wall-type, Pryne mod. 243-S, in orig. carton, $15. 213-379-4517.

Lawnmower. 20″, 3 h.p., used 1 yr., $25. 213-823-8694.

Surfboard, Hawaiian model, diamond tail, 6′7″, $50. 213-371-4395.

(Free (To Be Given Away)

Pup, 6 mos. old, black female lab & spaniel. 213-375-7978.

Pups, small mixed breed, males or females. 213-644-1381.

Dog, cocker spaniel, male, blk. & white, 6 or 7 yrs. old, 213-676-5164.

Dog, beagle, 1 yr. old, male, registered, all shots. 213-542-1049.

Personals

We wish to thank Bob's many friends & fellow workers for the kind expressions of sympathy at the death of our husband & father. ALICE DU PRIEST, ELAINE DRAPER & FAMILY.

Thanks to NRC & co-workers for the lovely plant & the many nice cards during my recent illness. JIM DYAR.

Share ride, 8 a.m.-4:45 p.m., near Palos Verdes Dr. N. & Silver Spur, to Electronics Haw. or Aircraft facility. 213-375-8536.

We wish to express our sincere appreciation to all Cash's friends at Northrop, who were so kind to him during his short illness; & to his family after the sudden loss. EARL, CASH & MARIAN ACKLEY.

Personals

I would like to thank all my friends for the wonderful retirement party & gift. NICK RANILL.

My family joins me in expressing thanks for the flowers, cards, calls & visits during my recent illness. RAY HOFIUS.

Want to join or organize car pool vicinity of Golden West College, 8 a.m.-4:42 p.m., Aircraft ext. 1822, 714-897-2007.

I want to express my most sincere thanks & appreciation to all my friends & co-workers at Northrop for my wonderful retirement party & the gift which I will enjoy tremendously. I shall always remember all of you. MATTIE LEE SHERBURNE.

My sincere thanks & appreciation to all my Northrop friends & co-workers for the retirement party & gifts. CHUCK BIJA.

Our sincere thanks & appreciation to all our friends at Northrop for the flowers & expressions of sympathy on the passing of our beloved wife & mother. THE H.A. (PAT) KEEHART FAMILY.

I wish to thank NRC & my friends at Northrop for the flowers & cards during my illness. ED SMITH.

For Sale or Trade

Engine, 1967, 289 cu.in., $85 or trade for table saw. 213-834-3290.

Movie Projector, Kodak reg. 8, $40 or trade for 10 Blue Chip stamp books. 213-679-6982.

RETIREMENT CLUB TO HOLD REUNION

The Northrop Retirement Club has scheduled its annual reunion dinner for Wednesday, May 16 at the American Legion Hall, 141st St., and Prairie Ave., Hawthorne.

Doors open at 3 p.m. and cost of the turkey dinner is $2.50.

For further information contact M. Orth, Retirement Club president, at (213) 676-8331.

NORTHROP NEWS

Vol. 31 **No. 4**

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Correspondent—Architectural Systems ..... **Dale Albee**

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Four Men in Electronics Awarded 25-Year Pins

Four veteran Northrop men will pin on their 25-year service pins this month at the Electronics Division, Hawthorne.

Jack W. Raquet, lead engineer, Engineering Fabrication unit, began his career as a laboratory mechanic in 1948, while Clyde H. Getz, chief of special projects, Special Projects group, started out as an electrical technician.

A former draftsman, Roland E. Gagon, is now assistant to the director of Support Engineering, and Lewis B. Richman, former instrumentation mechanic on Turbodyne, is now an engineer, ANS Engineering unit.

Other service pin recipients for the month are: 20 years—Kazuo Morita, Shirley Stevenson, Hawthorne, and John Cooper, Palos Verdes; 15 years — Harold Gerson, Hawthorne, Douglas Moore and Nettie Burns, Palos Verdes; 10 years — Robert Miller, Palos Verdes; 5 years — Mary McIntyre, Joan Hempel, Paul Wright, Phillip James, Hawthorne, and Ronald Johnson, Audrey Schumacher, Palos Verdes.

BOWLING

NRC Summer Bowling Leagues are now forming in all of the popular local bowling lanes. League entry forms are available at Personnel Activities, from the bowling commissioners, or league secretaries. Most new leagues begin in early May, so interested people should contact Otha Stubblefield, ext. 663, or Roger Hinzo, ext. 371, Electronics Division, Hawthorne, to assure placement in the league of their choice.

DISPLAYING A copy of the Saturday Evening Post circa 1949, that he appeared on, and a picture depicting famed artist Norman Rockwell posing him for the cover, is Bob Horton, senior artist, Reports and Proposals. Bob was a student at the Otis Art Institute in Los Angeles when Mr. Rockwell visited during the summer session to conduct lectures and take some "refresher" courses himself. Using several of the students for subjects in his cover series, Mr. Rockwell envisioned Bob as a T.V. repairman. It was during a recent television special on Norman Rockwell that Bob relived that memorable event 24 years ago.

Mr. Raquet

Mr. Getz

Mr. Gagon

Mr. Richman

Leathercraft Club Extends Welcome

The newly formed Leathercraft Club will meet Tuesday, April 24, at 5 p.m. in the NRC Clubhouse and each Tuesday thereafter at the same time and place.

Employees and their families are invited to join this interesting new activity of creating beautiful original items for your own use or as gifts.

Contact Gayle Hayes, ext. 2486, Aircraft Division, or Gail Wise, ext. 425, Electronics Division.

AWRS

(Continued from Page 1)

mance has also been developed. This new technique provides faster and more positive results while simplifying the computer program with a significant savings in memory utilization.

The next major milestone for fully qualifying AWRS navigation subsystem is to flight test the complete navigation system utilizing the Omega navigation data to improve the long term system accuracy.

Schmitt's Team Adds to Salute

Stephen Schmitt, son of George Schmitt, senior stock clerk, Electronics Division, had one of the proudest moments of his brief career recently when the American Heritage Drum and Drill Team, which he founded, conducted the flag raising ceremonies at St. Joseph's School in Hawthorne for one of America's recently returned POW's, Lt. Col. Robert Barnett.

Stephen, a history and music teacher at St. Joseph's, was doubly proud in that the Colonel's daughter, Lori, was a member of the drill team during a portion of the time he was held captive.

Currently working on his bachelor of arts degree from Loyola University in Los Angeles, the 27-year old teacher plans to incorporate a bugle corps to his drum and drill team which has participated in almost every parade in the Southern California area garnering over 50 trophies.

Many of the members of Stephen's corps wore Colonel Barnett's POW bracelet while he was captive and presented them to him at the ceremony. Colonel Barnett hails from Hawthorne.

STEPHEN Schmitt, left, founder of the American Heritage Drum and Drill Team, poses with Lt. Col. Robert Barnett during ceremonies at St. Joseph's School in Hawthorne.

WORKMEN SAFETY Committee members from the Hawthorne and Palos Verdes facilities are pictured during their monthly meetings. The safety monitors make thorough inspections of their respective installations and equipment seeking out possible job hazards or violations of safe practice codes. They follow up on any recommendations made by themselves or other safety groups. Pictured on the left,

from Hawthorne, left to right, are: E.J. Sturbenz, W.T. Banks, Donald Ross (chairman), S.A. Collins, Joseph Pisch, and Richard Croxton. Photo on the right, from Palos Verdes, left to right, are: C.A. Brewster, Paul Rose, Dick Paramore (chairman), John Kennedy, J.J. Rahiya, and Rhoda Givens.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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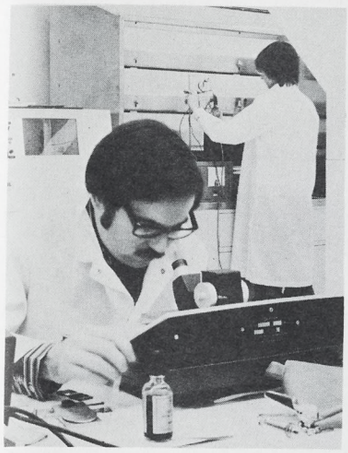
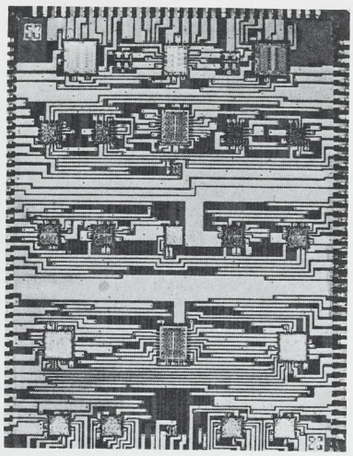




JIM HAYWARD, process engineer, conducts in-process inspection of the BLIP™ interconnect structure using a DEKTAK device. Photo on right, depicts 1/3 of the Arithmetic Section of a computer in the BLIP™ technology representing 8 bits of a 24 bit machine. Each slice measures 1 inch by 1.4 inches and contains 20 MSI functions and four quad-resistor networks.

Berkeley Scientific Labs Awarded Salinas Contract

Berkeley Scientific Laboratories (BSL) has been contracted to provide a clinical laboratory data acquisition system for Salinas Valley Memorial Hospital with components of the system being supplied by the Hayward and Torrance facilities of BSL.

Meeting the needs of the hospital will be the CLINDATA™ 400, an on-line, real-time clinical computer system, which dramatically reduces the elapsed time from when a specimen arrives in the lab to when the value of the determination is available for reporting to the attending physician.

In addition to improving patient care through rapid interpretation of test results, hospital technologists will now be free to accomplish much more complex duties than simple clerical tasks that were involved with the transferring of test results to patient charts, through handwritten forms and reports. The computer, by providing a daily cumulative readout of test results, solves that problem.

BSL has also been contracted to supply a totally automated business data system for the hospital's reference laboratory.

The BDS 1000 features a mini-computer and video terminals that automate all paperwork associated with patient billing, insurance forms processing, accounts receivable, daily records, and financial and management summary reports.

Funny Money Meeting

A combined meeting of the Coin clubs of the Electronics, Aircraft and Electro-Mechanical Divisions is scheduled for Tuesday, June 12, at 7:15 p.m. in the Anaheim facility's NRC Clubhouse.

Featured will be Mr. Provasi of the U.S. Secret Service who will exhibit examples of counterfeit money in various denominations as well as the plates used to create them.

Members and interested people are invited to attend and should contact Dick Reamer, ext. 542, or Jack Wilson, ext. 2608, Hawthorne, or contact Personnel Activities.

BLOOD DRIVE

Electronics Division personnel at the Hawthorne facility will be able to donate blood without the inconvenience of leaving their building when the Bloodmobile visits Monday, June 11, from 9 a.m. to 1:30 p.m.

The blood drive will be conducted in the cafeteria annex next to the patio area. For further information contact Arnah Pakes, ext. 261.

Micro-packaging Idea Developed by SMSS

The Strategic Missile and Space Systems Department at Palos Verdes has developed the manufacturing concepts for producing a highly reliable micro-packaging technology of high density. This concept, BLIP™ (Beam Lead Interconnect Package), eliminates flying wire bonds, major failure mode in the standard hybrid technology.

Under development during the past three years, BLIP™ fills the void for a high density packaging technology compatible with the recently developed Medium Scale Integration (MSI) and Large Scale Integration (LSI) semiconductors for both Bipolar and MOS.

The unique element of BLIP™ is the multilayer interconnect which provides a three dimensional structure containing beam leads as an integral part for attachment to the semiconductor and the next level of interconnect. This concept eliminates the hand wiring and time consuming task of bonding required by the flying wire approach and the quality control and heat dissipation problems associated with the beam leaded chip approach.

The BLIP™ uses standard Bipolar or MOS devices in the standard face-up configuration, thus imposing no special requirements on the semiconductor devices. In addition, the technology uses low Z materials achieving beam bond strengths three times the bond strength of the gold flying wire technology. This makes the BLIP™ technology ideal for military applications.

The multilayer interconnect being similar to a microminiature printed circuit board allows the adaptation of available software to implement automated layout techniques. This reduces the design time normally required for complex microcircuits.

Electrically the BLIP™ interconnect structure, with its low line capacitance and incorporated ground planes, is ideally suited for high speed switching circuits and high impedance MOS circuits. In addition, parasitic effects are predictable and repeatable because of the fixed beam and interconnect structure.

New Data System Unveiled by BSL

A new, low-cost business data system designed especially for small medical clinics and physician groups was unveiled recently at the California Medical Association convention in Anaheim, Calif.

Produced by the Business Data Systems Division of Berkeley Scientific Laboratories (BSL), Torrance, Calif., the real-time, inter-active data system, designated the BDS 1000, automates patient billing, insurance forms processing, accounts receivable, daily records and financial and management summary reports.

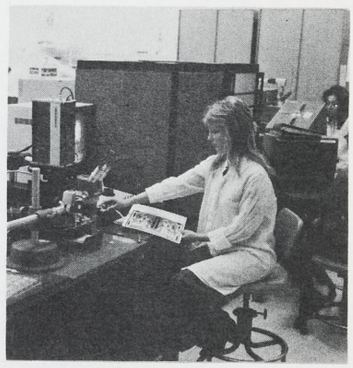
Consisting of a mini-computer, disc memory storage, high speed printer and video display terminals, the BSL system can be operated by existing office personnel without special training.

New Trimmer Doubles Output

During the C-5 program Northrop technicians at the Electronics Division realized that there was not a sufficient supply of highly reliable micro-circuitry available from outside manufacturers, so the obvious solution was to establish their own hybrid micro-circuitry laboratory.

The Hybrid Micro-Electronic

(See HYBRID, page 8)



LESLIE Brede, demonstrates the computerized Teradyne laser trim system in the Hybrid Laboratory at the Hawthorne facility.

Dr. Krebsbach Named Director of Medical

Dr. Richard J. Krebsbach has been appointed Corporate director of Medical, it was announced by J.H. Bruce, Corporate vice president, Industrial Relations.

Dr. Krebsbach will continue in his present capacity as head of the Medical facility at the Aircraft Division, in addition to his new assignment, which was established as a result of the increased emphasis on, and in recognition of the need for, a Corporate -wide program of occupational and environmental health.

Dr. Krebsbach

Dr. Krebsbach has been head of the Medical organization at Aircraft Division since 1956. He has been certified by the American Board of Preventive Medicine as a specialist in Occupational Medicine; and is a Fellow of the American College of Preventive Medicine and of the Industrial Medical Association.

In addition to serving on the staffs of various hospitals and medical associations, he is a member of, and has won awards from the American Cancer Society, American Heart Association and the California Regional Medical Program.

He received his B.A., B.S., and M.D. degrees from the University of Minnesota, graduating with honors and was elected to Alpha Omega Alpha, the national honor medical society.

EARNINGS REPORTED

Northrop Corporation reported net sales for the first quarter of 1973 of $132,165,000 compared with sales of $113,306,000 in the first quarter of 1972, Thomas V. Jones, Northrop president, has announced.

First quarter net income totaled $1,767,000 compared with $2,353,000 for the same quarter a year ago. This is equivalent to 42 cents per share for the first quarter of 1973 against 52 cents for the first quarter of 1972.

NORTHROP WAS one of the major Southern California prime contractors participating in the Federal Procurement conference held recently to assist small businessmen seeking additional subcontracts. Sponsor of the conference was Congressman Charles H. Wilson, center, shown here with Max G. Pellerin, left, Northrop Corporate Small Business liaison officer, and James Ourand, staff assistant.

Electro-Mechanical Division Develops Dual-Purpose Emission/Engine Analyzer

An advanced engineering model of an Emission/Engine Analyzer has been built by Northrop's Electro-Mechanical Division under contract to the U.S. Tank-Automotive Command, Warren, Mich.

The analyzer was designed as a simplified diagnostic system for the field mechanic, combining a number of separate component test devices into a single, portable, lightweight unit.

The analyzer will be evaluated on an Army M151A2 quarter-ton, gasoline fueled vehicle. However, a Northrop spokesman said that the diagnostic concepts and test techniques developed provide the baseline for expanding the application to other gas engines and engines of the diesel fueled and gas turbine variety.

The analyzer was designed as a dual-purpose device to operate in two modes of maintenance consideration.

First, the unit is used for inspection of the vehicle's exhaust emission to determine compliance with state road test standards.

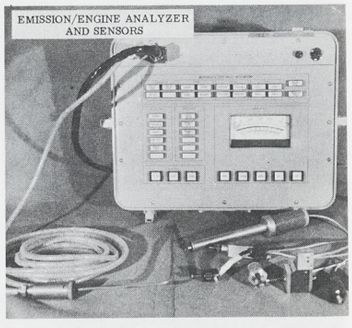
Second, the unit will diagnose the tuneup/repair actions necessary to reduce emission to meet state standards.

In addition, the analyzer identifies specific engine faults and pinpoints faulty components for repair.

The analyzer can reliably and simply identify malfunctioning or misadjusted components in the carburetor system, ignition system or internal to the engine block itself. This is accomplished by coupling emission analysis methods with new techniques developed by the Electro-Mechanical Division which utilizes sensors associated with ultra-sonics, vibration and timing.

A unique and most desirable feature of the device is that it can be set up for use by means of a minimum number of quick connect/disconnect sensors. The sensors do not require disassembly of engine components or altering the engine in any way.

The Emission/Engine Analyzer was developed by the Electro-Mechanical Division's Automation Systems Department, Machine Monitoring group, under Pete Leibert, who is also project manager for the milestone program. Chuck Blaney is responsible for the marketing aspects of this TACOM contract and other military opportunities identified with machinery monitoring technology. Major technical contributions to the program are credited to Art De Bolt for systems design and Lyle Rennick for logic design. Contractual aspects are being handled by Tom Sneed.



ENGINEERING model of an emission/engine analyzer built by the Electro-Mechanical Division under contract to the U.S. Tank-Automotive Command, Warren, Mich.

A TECHNICIAN from Northrop Services Inc. sprinkles dust from the moon on living plants at the Lyndon B. Johnson Space Center, Houston, Tex., to observe the effect on earth vegetation. This is one of the many unusual jobs performed by Northrop support people for the National Aeronautics and Space Administration. (Bob Thornton photo)

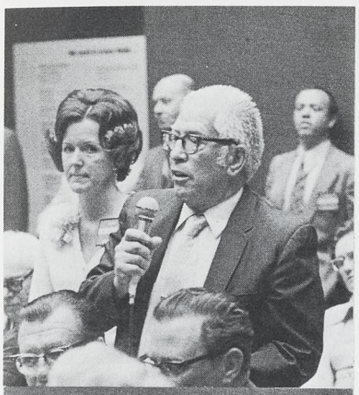
CONTRACT AWARDED TO PAGE

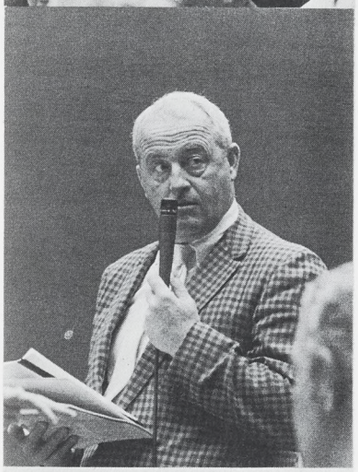
Page Europa (Rome, Italy) subsidiary of Page Communications Engineers, Inc., Vienna, Va., has been awarded a contract by the Turkish Ministry of Defense for a Transportable Integrated Telecommunications System. Contract value is approximately seven million dollars.

The system comprises 19 tropospheric scatter terminals, 32 line-of-sight microwave terminals, switching and control terminals and related antennas, interconnecting cables and transmission line. The system is designed as mobile units for quick set-up, dismounting and rapid relocation. Training and follow-on logistics support are also included. Page Europa will perform the shelterization work at its Rome, Italy, facility where similar international projects are being implemented.

Page Communications Engineers, Inc., designs, engineers, constructs, installs, operates and maintains communications systems throughout the world — and is a subsidiary of Northrop.

Northrop Shareholders' Meeting





THOMAS V. JONES explains the operation of the company's large amplitude flight simulator to shareholders Mattie Lee Sherburne, Los Angeles, and Alex Tecklin, St. Louis, Mo., at the annual shareholders' meeting. Mrs. Sherburne is a Northrop retiree and Mr. Tecklin has been a Northrop shareholder for 23 years. The surrounding candid photographs were taken during the meeting.

'Can Meet Challenges In Worldwide Markets'

—Thomas V. Jones

Northrop can meet the challenge of changing requirements in U.S. and international defense spending and can capitalize on opportunities in the commercial sector, President Thomas V. Jones stated at the annual shareholders' meeting, May 8.

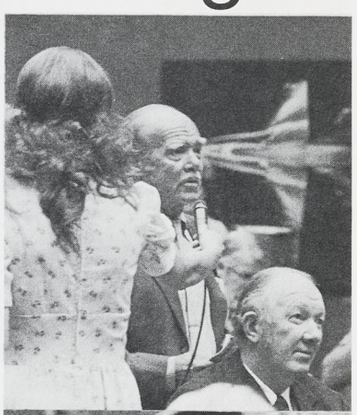
"The projected growth rates for the United States and other leading countries indicate a strong worldwide market for all categories of civil aviation, including a strong second cycle of orders for large capacity airliners and for freighter aircraft," he said. "Also better airport design and development, and more precise traffic control and navigation equipment.

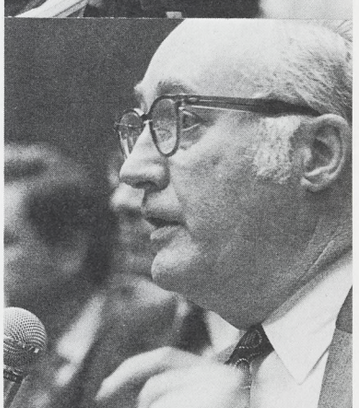
"And," he added, "these are all directions in which we are playing a major role."

In 1972, aircraft accounted for 45.3 per cent of Northrop's total sales; electronics and communications product lines made up 32.1 per cent and construction, 16.5 per cent. About 30 per cent of the firm's business was international in scope.

From a financial standpoint, Mr. Jones told shareholders the near term outlook for Northrop is not from the peak of a production cycle, but from the early stages of either development or production on the programs most likely to yield substantial volume.

"The cycle we are currently in makes it unwise to predict earnings for 1973. However, during this year we do see several areas of potential gains over 1972; and with certain negotiations successfully concluded and with the increasing aircraft production rates, by the end of the year we expect to be approaching the higher profit rate we have experienced in the past. This, taken with the higher backlog anticipated at the end of the year, gives us the basis for favorable expectations in 1974."





Still Time to Participate In Savings Bond Drive

The Annual Savings Bond Campaign at Northrop began May 7, according to Paul L. Faranda, Corporate director of Industrial Relations.

"Series E Savings Bonds pay 5½ per cent interest, compounded semiannually, when held to maturity of 5 years, 10 months. They are not subject to local or state income tax, and federal tax can be deferred until after retirement, when most people reach a lower tax bracket.

"Series E Bonds are easily replaced if stolen or destroyed and can be cashed in at full purchase price plus interest after two months. Bonds are crucially important for the noninflationary management of the national debt and contribute to the over-all stability of the American dollar," Mr. Faranda said.

The Northrop campaign this year is again being conducted to give those who are not participating, an opportunity to do so, and also to provide those who are participating to increase their payroll deductions for bonds.

Division bond coordinators have been appointed, as well as bond representatives in each division, to assist personnel who wish to join the bond program or to increase their bond allotment.

Let's make 1973 the year that Northrop really "Takes Stock in America."

JAN WHITFIELD, Electronics Division, is reminding all employees to "get on the bond wagon" for that extra security. Contact division coordinators for assistance. Bond drive ends May 25.

PHOTO SERVICE

Employees can now have all their photo finishing needs taken care of at low discount prices through Personnel Activities and the GAF Photo Service.

Color or black and white print service; chrome processing of slides and movies; and reprint and enlargement services are just part of the quality service available from GAF, in addition to low prices on film and flash bulbs.

Contact your division Personnel Activities office for further information.

Northrop Credit Union Extends Lending Policies

The Northrop Credit Union at Hawthorne, has extended the maturity on First Deed of Trust loans to 20 years.

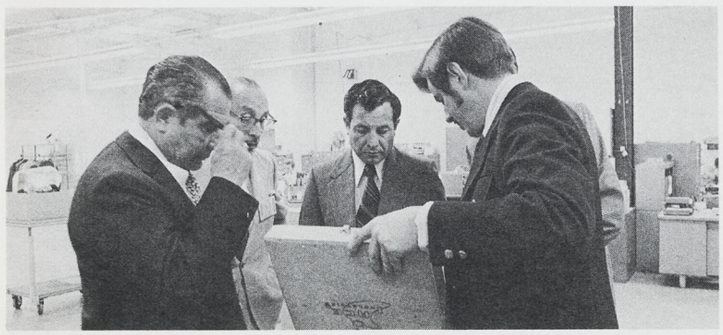
This, combined with the low interest rate of 7.5 per cent and the advantage of no points, makes the Credit Union a convenient source of financing.

Maximum loan value on new mobile homes has been increased to 80 per cent of the total cost. Restrictions on the age of used mobile homes has been eliminated.

The length of repayment on 85 per cent of the purchase price of a new automobile has been extended to 42 months. This change also increases the terms on 75 per cent financing to 48 months.

Share deposits for any individual account will now be accepted up to $10,000 plus dividends.

The Credit Union urges you to consider these changes before borrowing for any of your needs.



INTERESTED viewers of information pertaining to Ventura Division products was a Peruvian delegation. During tour of division, the visitors were briefed on the Mark 37C by Ray Janis, project engineer, at far right. From left are, Rear Adm. Jose Arce, Naval attache, Peruvian Embassy; Cmdr. Juan Castilla, assistant Naval attache and Dr. Robert M. Aragon, honorary consul.

PRESENTING THE FIRST $500 scholarship as part of Northrop Worldwide Services, Inc.'s, program of assisting minority students at Cameron College, Lawton, Okla., is Gaylord Anderson, vice-president, left, and G.R. Jacobson, director of Administration. The student is David W. James, a freshman business major. Mr. James will receive $500 annually during his remaining three years in college.

AWARDED BY NWASI

First Annual Scholarship

Northrop Worldwide Aircraft Services, Inc., Lawton, Okla., has awarded the first $500 scholarship in its program of equal opportunity through racial equality to David W. James, a freshman student at Cameron College, a local four-year college in Lawton.

Mr. James becomes the first recipient of this scholarship program of Northrop Worldwide Aircraft Services, Inc., which will select a new freshman student annually until a total of four students are receiving the funds. When fully under way, the total amount of scholarship money from NWASI will be $2000 annually.

Criteria for the award is based on financial need and academic ability in the fields of business, management, engineering, science or technology and will be limited to men or women students from minority or ethnic groups.

NWASI is the first private organization to initiate an award program at the school concerned solely with minority students.

Northrop Capabilities To Be Displayed

The photographs illustrating Northrop capabilities which were exhibited at the annual shareholders' meeting (see page 3) will be displayed at each Northrop facility within the next few weeks so that all employees can become better acquainted with the activities of their company.

Starting Monday, May 21 through Friday, May 25, the photographs will be displayed at the Electronics Division, Hawthorne.

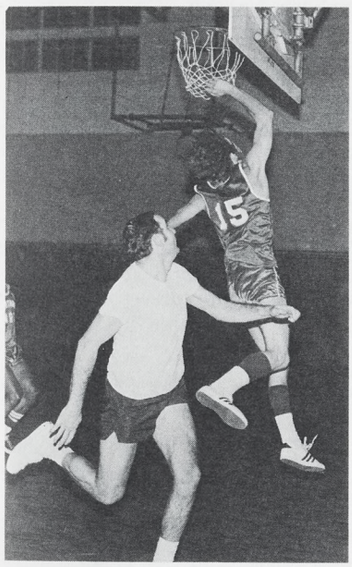
Subsequent showings will be held at all other Northrop facilities which have room for the exhibit.

Specific dates will be announced as schedules are determined.

A PLAQUE honoring Frederick B. Sarsar, manager of Configuration, Development and Integration Department, Aircraft Division, is exhibited above before being placed in the library of the Northrop Institute of Technology, Inglewood. Mr. Sarsar, who passed away in December, was very active in the alumni association of the institute from which he graduated in 1948 with a bachelor of science degree in aeronautical engineering. A group of Mr. Sarsar's fellow workers at Northrop collected over $2000 for a book fund to be utilized by the library in Mr. Sarsar's name. Pictured at the ceremony are, left to right, Mrs. Frederick B. Sarsar; Victor Brock, manager, Cobra Project Engineering and co-worker of Mr. Sarsar at Northrop; Dr. B. J. Shell, president of Northrop Institute of Technology; and Nan McCandless, director of library services.

ELECTRONICS Division captured third place in the tournament by downing Ventura Division, 59-48.

First Annual All-Northrop Basketball Tournament



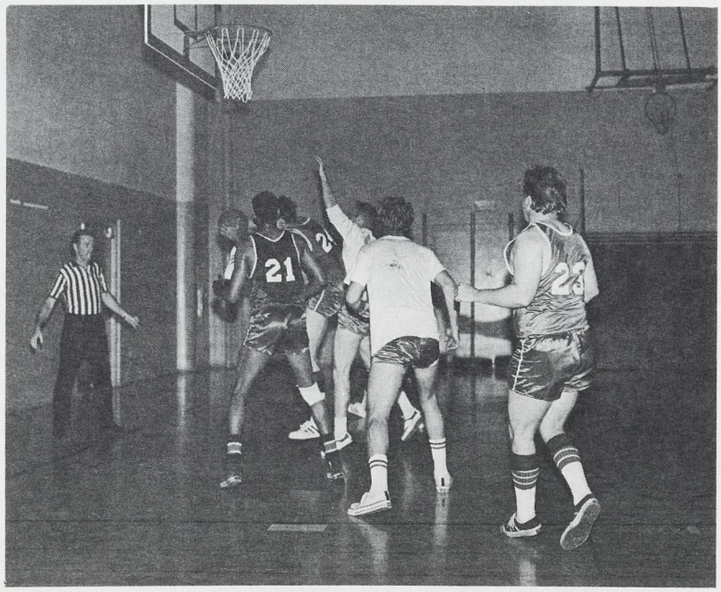
AIRCRAFT Division man scores basket during title game against Electro-Mechanical Division.

ELECTRO-MECHANICAL team members position for possible rebound. Anaheim team took second place.

AIRCRAFT Division team accepts trophy in first annual all-Northrop basketball tournament.

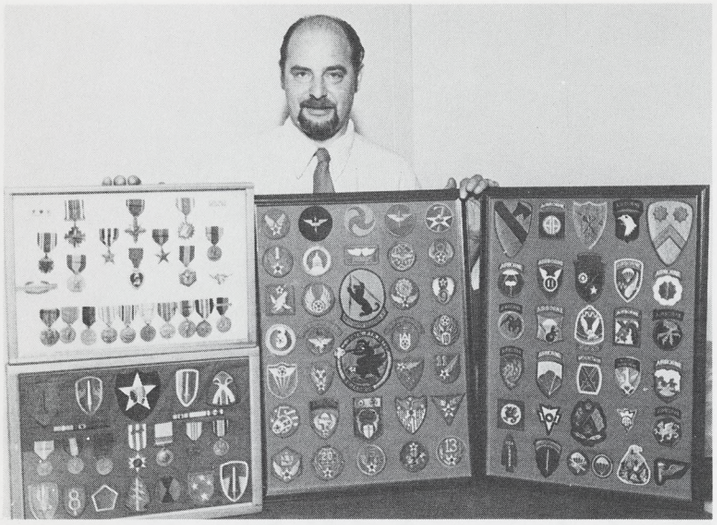
AIRCRAFT rolled off 10 straight points in second half to clinch title.

PHOTOS
BY
DAVE SALDANA



AIRCRAFT rebounding strength proves too much for a game Anaheim squad.

TOURNAMENT high-point man Vince Cunningham of Anaheim scores against Aircraft Division.



DICK OLESON, engineering technical assistant, Electronics Division, displays a "few" of the organizational patches, insignia and medals he has collected since taking up his hobby in 1969. A member of the Southern California Military Insignia Collectors Club, Mr. Oleson has acquired over 800 patches and medals through his own service in the Air Force and swapping with fellow collectors. This is quite an accomplishment as U.S. military paraphernalia may not be bought or sold.

Anaheim Club Aids College Student in Ecology Project

After planting 2000 trees of their own on Northrop Anaheim property to aid ecology, the Electro-Mechanical Division's NRC Horticulture Club has voted to help a teenage college student in his own struggle to plant trees.

Members of the club read an article in a Los Angeles newspaper about the troubles 19-year-old Andy Lipkis was having with his plan to plant smog resistant trees in the San Bernardino National Forest. He conceived the project after reading an estimate that smog would kill the present trees within 20 years.

The story said the young man had obtained 8000 seedlings from the Department of Forestry. College friends and Boy Scouts helped him plant the seedlings in milk cartons to keep them alive, but now he was trying to raise money to truck them to the mountains for planting.

"We are greatly in sympathy with the young ecologist," Jack Lahn, Horticulture Club president said. "He has the same goals our club has. So members voted to make a cash donation to help him along.

"In addition several club members have volunteered to help plant his trees if arrangements can be made."

Tree planting is just one of the many ecology projects carried out by the club. Memberships are still open, according to President Lahn.

New Vehicle Regulations

Don't touch that odometer!

Federal regulations require written notification from seller to buyer of the mileage the vehicle has traveled. This notification became effective March 1, 1973.

The new regulations require each person transferring ownership of a motor vehicle to furnish a written, signed statement containing: the odometer reading at the time of transfer; the date of the transfer; the current address of the person making the sale or transfer; and the identity of the vehicle, including its make, model and body type, its vehicle identification number, and its last plate number.

Comment . . .

Advertisements sent in to the Northrop News usually don't ever come out in the paper, or it is one or two months before they appear. Why?
Unsigned

Classified ads are published in the first issue after the deadline for their receipt, with one exception: If two ads are received from one family, in accordance with our stated policy, only one of them is published immediately, and the second is held for the next issue.

Certain types of ads cannot be accepted, namely: those pertaining to a business, or to real estate or housing, unless the advertiser is a new employee looking for a home or a transferee who wishes to sell or buy a home.

Remember too, that all Northrop employees and retirees in all divisions may use the classified columns.

I'd like to see a corporate-wide computerized telephone directory so that changes in personnel, locations and phone numbers can be updated as they occur, and a revised tab run published weekly.
Bob Houghland
Electro-Mechanical

According to Marvin Jones, Systems and Procedures analyst, Electro-Mechanical Division, such a system has been established and the programming prepared; but interest apparently is not great enough to justify implementation, as telephone change information from organizations is not forthcoming as required by the system procedures.

As you pointed out in another part of your comment, most people maintain their own list of frequently called numbers anyhow, and the operators at the various facilities do have the latest information on locations and phone numbers if you cannot find the correct information in the book.

Canoe Club Plans Outings

The Canoe Club was formed two years ago and is planning its third year of activities.

With 11 15-foot canoes in its possession, the club anticipates one-day outings to Newport Beach, Cabrillo Beach, Marina del Rey and Alamitos Bay. Camping-canoeing trips are planned for the Colorado River.

Also, moonlight "cruises" in the nearby marinas will be scheduled, as weather and interest dictate.

Employees interested in participating in these events should contact Brian Agnew, activity chairman, or Chuck Pristas, commissioner, on ext. 1412, Aircraft Division.

Currently in progress is a program on the safe and correct use of canoes which will result in the participants receiving American Red Cross cards for canoeing. These cards are required for the longer or more demanding trips.

NRC RECOMMENDS — The Universal Studio Tours has added some new attractions, including a "parting of the Red Sea," a junior stunt school for kids, and a haunted mansion set, among others, but have kept the regular attractions like "high noon," shown here, when stunt men put on a dramatic Western shootout. A special "Universal City Fan Club" card is available at all Northrop Personnel Activities outlets that provide a 10 per cent reduction in admissions when presented at the box office. The card is free.

ORIENT TOUR

Interest in the NRC Travel Club-sponsored 22-day Orient tour continues to build.

A meeting has been scheduled for the NRC Clubhouse, at 8 p.m. on June 1. A film will be featured and representatives of tour services will be present to answer questions.

The tour will depart Nov. 4. Cost per person is $1189 and includes jet fare, hotels, extensive sightseeing in Japan, Taipei, Bangkok, Singapore, Bali and Hong Kong.

Brochures are available at Personnel Activities offices.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. California Operations deadline: noon, second Wednesday of month. Precision Products deadline: to Connie Nelson, first Friday of month.

Vehicles For Sale

Motorcycle, 1970 Honda 350 Motocross, $400. 714-776-8065.

Station Wagon, Opel, 1968, 100 h.p. eng., 53,000 mi., $650. 213-375-0493.

Station Wagon, 1963 Chev. Impala, $350. 213-541-2207.

Mustang, 1965, r/h, auto. trans., $650. 213-860-9451

Motorcycle, 1969 Suzuki T-250, street equipped, $375. 213-425-3658

Olds, 1966 Cutlass, 2-dr., auto. trans., p/b, p/s, 350 cu. in. eng., $750. 213-373-4072

Motorcycle, 1971 Honda 450, Mod. CL 450, $700. 213-644-5664.

Cadillac, 1970 Coupe de Ville, air, AM/FM stereo, full power, $4500. 213-478-4600.

Mustang, 1969 Mach 1, 351, auto., p/s, p/b, 48,000 mi., $1500. 213-320-7545.

Chevrolet, 1972 LUV w/camper, FM tape deck, $1900. 213-325-2613, 213-375-9675.

Buick, 1970 Estate Wagon, many extras, $2800. 213-328-3020.

Triumph, 1969, TR-6 convt., 4-spd., $1995. 213-826-7518.

Pickup, 1968 Chevrolet, $1400. 213-675-1336, 213-973-1257.

Chevrolet, 1972, 4-whl. dr., ¾-ton, 8' Siesta, fully contained, 350-turbo hydro, other access., $5000. 213-671-4764.

Chevrolet, 1964 Nova h/top, $200 & take over $30 mo. pymts., approx. bal., $383. 213-676-5164.

Olds, 1965 Vista Cruiser station wagon, 3-seat, a/c, auto. trans., p/s, p/b, $750. 213-378-2790.

Toyota, 1969 Sedan 1900, auto. trans. $995. 213-677-6926.

Jeep, 1964 6-cyl. pickup, 4-whl. dr., Warn. hubs, $700. 213-373-7169.

Sports Racer, 1964 Merlyn MK VI, 104E De Tomaso Ford w/webers, 2-f transaxle, $1750. 714-642-5656.

Camaro, 1968, 327, 4-spd., p/s, disc brakes, $1150. 213-786-6316.

Olds, 1967, Delta 88, 4-dr., fact. air, all power, $900. 213-889-0888.

Sand Rail Buggy, VW, $450. 714-894-9517.

Datsun 1200, 1973 sport cpe., 1200 mi., offer/equity, bal. owing, $2200. 213-462-4696.

Motorcycle, 1972 Harley Davidson, 74" frame, 1200 cc, 2,500 mi., $2000. 213-638-1489.

Motorcycle, 1972 Honda 450, custom blt., $850. 213-398-0377.

T-Bird, 1964, full power, $350. 213-375-6715.

Mustang, 1970 Mach I, auto. trans. r/h, a/c, stereo tape deck, 27,000 mi., $2950. 213-541-1277.

Pickup, 1970 Chev. ¾-ton, custom cab, 3-spd., 307 V-8, camper equipped, $2200. 213-894-3180.

Ford, 1968 Mustang, 2-dr., radio, a/c, auto. trans., $995. 213-478-2501, 213-645-5543.

Ford, 1967 Custom 500, 4-dr., V-8, 390 eng., $450. 213-630-3888.

Dune Buggy, 1971 VW, w/1500 cc Holley equipped VW eng., $1400. 213-697-1075.

Buick, 1969 Riviera, full power, $2400. 213-327-9044.

Pontiac, 1964 Bonneville, 2-dr. h/top, r/h, $250. 213-944-7666.

Motorcycle, Yamaha 250 MX, 1970, lowered frame, extras, $400. 213-326-2453.

Chevrolet, 1966 SS Impala, Cragar rims, 51,000 mi., $800. 213-754-3665.

Miscellaneous For Sale

Washer, Kenmore, lge. cap., $35. 213-644-1788.

Flash Unit, National electronic, PE-260, never used, $35. 213-375-6733.

Horse, reg. Tenn. walking 6 yr. old mare, $900. 213-542-4167.

Travel Trailer, 1955 17' Kenskill, butane stove, elec. brakes, $595. 213-645-8373.

Couch & chair, naugahyde, turquoise, $25. 213-328-3306.

Utility Trailer, 5'x7', room for 3 motorcycles, $100. 213-830-5225.

Tables, maple, 14" round, 2 tiers, $10 ea. 213-541-3000.

Pups, retriever, yellow, $25. 213-377-6658.

Miscellaneous For Sale

Television, Magnavox console, color, 21", recently rebit. $50. 213-641-6322.

Chain Saw, McCulloch Mini-Mac 6, auto. chain oiler, $129. 213-370-0824.

Convertible Top, soft, for 1967-72 Datsun Models 1600 or 2000, $15. 213-374-7394.

Trailer, 8x35', all alum. $1800. 213-865-1770.

Record Player, stereo, Sylvania portable, $30. 213-372-3827.

Boat, 10', 3½ h.p. outbd. Evinrude, $125. 213-644-2009.

Pup, poodle, AKC w/paper, small white miniature male, $50. 213-866-4104.

Davenport, 8' vinyl, $125. 213-644-8001.

Dryer, Kenmore, elec., $125. 714-828-6751.

Couch, & other items, $5 & up. 213-542-3626.

Rollaway Stand, portable, for 18" or 20" RCA or Zenith TV, never used, $10. 213-328-0887.

Blankets, 25, children's, sheets & mattress pads, $15. 213-376-4831.

Mini Bike, 4 h.p., front & rear shocks, $85. 213-864-0411.

Desk, oak office-type, $15. 213-329-9195.

Wheels, 4, chrome, tires 6.45x14, for V/W, $45. 213-823-8694.

Breakfast Set, Formica, 4 chairs, tan, $25. 213-675-6020.

Air Conditioner, for Chevrolet eng., $40. 213-676-4272.

Lamp, hanging-type, wrought iron, red & gold glass inserts in scroll work, $40. 213-674-1400.

Washer & dryer, elec., 1970 Lady Kenore, $200.805-642-0689.

Tape Recorder, reel, Sony mod. 111, w/carrying case, $30. 213-675-1000.

Snare Drum, 2 yrs. old, $40. 213-837-2942.

Bowling Ball, Brunswick, 16 lbs., black, $8. 213-675-0858.

Metronome, electronic, $9. 213-599-7009.

Aquarium, 17 gal. Pemco show tank, black wrought iron Mediterranean style stand, complete, $45. 213-676-1441.

Air Conditioner, window/wall, 23,000 b.t.u., $275. 714-637-7662.

Pups, German Shepherd, purebred, black & tan, female, $25, male, $40. 213-887-7518.

Excercycle, Murray, 55 mi., $40. 213-377-7670.

Sewing Machine, console-style, $85. 714-847-4700.

Fence, 2' x 70', steel, picket, w/steel post, $15. 213-323-3528.

Sewing Machine, Singer mod. 301, w/attachs., $35. 213-325-2952.

Skiis, Hart Standards, 190s, bindings, $50. 213-644-6940.

Crib, w/mattress, $15. 213-530-1191.

Guitar, elec., amp., $50. 213-676-3379.

Camera, SLR, 35 mm, Nikkorex-F, 50 mm f2 Nikkor-S lens, lens-coupled expos. meter, hood, case, $140. 213-378-7166.

Tires, 2, Pirelli Cinturato radial, 185x14, nearly new, $35. 213-542-8373.

Battery, 6 v., car or boat, $5. 213-423-1363.

Sofa, Hide-A-Bed, $30. 213-676-0666.

Bookcases, 2, 5'x6' w/base cabinets, & other items, $25 ea. 213-375-9397.

Sailboat, Coronado 15, trailer, many extras, $950. 805-483-5644.

Sterling Silver, service for 8, tarnish proof solid mahogany case, John & Priscilla pattern, Westmoreland, $400. 213-378-3989.

Camping Trailer, Kreuger Travel-Aire Viking, 8' x 10' alum. cabin, sleeps 3, many extras, $300. 213-861-7035.

Sofa, blue w/walnut trim, 90", $50. 213-378-1486.

Boat, 15' Dorset, 75 h.p. outbd. eng., trailer, ski equip., ocean equipped bait tank, $750. 213-325-2292.

Exercizer, Stauffers, $20. 213-371-8650.

Pool Table, 3 cues, bridge, balls, rack, $30. 213-498-2300.

Mobile Home, in Gardena, 35x8, alum. awning, partly furn., $2100. 213-323-1509.

Rugs, Oriental, 4x4 Borsherlons, $80, other rugs, various prices. 805-498-1483.

Amplifier, Lafayette LA224T 26 W. stereo, solid state, still boxed, $45. 213-377-8508.

Aquarium, 140 gal., complete, wood frame, $125. 213-396-0634.

Pups, Samoyed, AKC, show quality, 4 males, $150-$300. 213-425-6996.

Mag Wheels, 4 14"x6" AP w/dust covers, fit any 4-lug-type whl., $80. 213-821-3691.

Coffee Table, white marble, $50. 213-370-8119.

Stove, O'Keefe & Merritt, $50. 805-498-1235.

Camera, Kodak Retina II, 35 mm, case, $40. 213-392-9583.

Writing Desk, contemporary style, French walnut, $50. 213-376-2190.

ELECTRIC-POWERED drone is shown being launched at model airplane strip behind Ventura Division during filming of NBC News feature on Remotely Piloted Vehicles. The electric-powered drone was built for Northrop by Astro Flight, Inc., Venice, Calif. Footage shot of the drone later was used in the RPV feature edited and narrated by NBC's Roy Neal.

Miscellaneous For Sale

Washer, Frigette portable, coppertone, 1 yr. old, $65. 213-675-3889.

Piano, upright, modern cabinet, $145. 213-696-7529.

Amplifier, EICO St. 70 stereo, St. 90 FM tuner w/out Multiplexer, Knight KN4000 stereo tape recorder w/dual heads, mounted in cab., $100. 805-495-2609.

Wanted To Buy

Slant Board. 213-329-9784.

Free (To Be Given Away)

Pup, German Shepherd, female, 6 mos. old, all shots. 213-883-2258.

Child Care

Child Care offered, children 2½ to 6 yrs. of age, weekdays, located in N. Torrance. 213-329-2556.

Lost

Tie Bar, gold, shaped in form of the "LOVE" in block letters, in or near Engineering Science Center, Lost & Found, ext. 1972.

Personals

I wish to thank all my friends at Northrop for the retirement party & best wishes. Retirement (so far) is more than I expected. It all seems too good to be true. W. F. "SCOTTY" SMITH.

Ride wanted daily, 4:42 p.m., from Engr. Science Center to vicinity of 230th & Crenshaw Blvds., Aircraft Div. ext. 2657, 213-530-5651.

I would like very much to thank all my friends in Manufacturing Control, for the retirement party, the time & consideration given me. MIKE LEGG & WIFE.

My deepest appreciation & thanks to my many friends at Northrop for the gifts of flowers, donation to the heart fund, at the time of the passing of my wife, Shirley. DICK GAINER.

Our sincere thanks & appreciation for the help & sympathy extended during the illness & loss of our husband & father. MRS. BOBBE BOHNE & FAMILY.

I want to thank all of my friends for the beautiful going away party. NANCY L. DICK.

Want car pool members, vicinity of Winnetka & Ventura Freeway, 7 a.m.-3:42 p.m. to Hawthorne, Aircraft Div. ext. 1964, 213-887-6287.

Share Ride, 7 a.m.-3:42 p.m., near Victory & Van Owen or Victory & Shoup, Canoga Park to Aircraft Div., exts. 2757, 1523 or 213-347-4200.

Ride Wanted, 8 a.m.-4:42 p.m., Century Blvd. & Aviation Blvd., to NCL Bldg., Aircraft Div. ext. 5107, 213-641-1374.

HOLIDAY COMING

The first long weekend of 1973 is in store for Northrop employees when Memorial Day will be observed, Monday, May 28, as one of the company's paid holidays.

Personals

Words alone cannot express my thanks & appreciation to all my friends & co-workers of Northrop for the retirement party & gifts. I will never forget you. H. E. HUDSON.

We wish to thank all the friends & co-workers for all the many cards & sincere wishes during the illness & loss of my husband & our father, Robert Fenton. MARY FENTON, JOY PAULSEN & WILLIAM GAMBLE.

Our sincere thanks & appreciation to all our friends at Northrop for the flowers & expressions of sympathy on the passing of our beloved wife & mother. THE ED & TOM SELLINGER FAMILY.

Ride Wanted, 8 a.m.-4:45 p.m., from 107th & Prairie Ave., Aircraft Div., ext. 2586, 213-671-8890.

For Sale or Trade

Travel Trailer, Fireball, 16' self-contained, sleeps 7, $950 or trade for smaller trailer. 213-699-8173.

Boat, 1971, 16' glasspar tri-hull, 60 h.p. Johnson o/b motor, lge. whl. Wallstrong trailer, many extras, $2500 or trade for late model travel trailer of like value. 213-324-1593.

WANTED

Paperback and hard cover books for lending library for Northrop personnel on overseas assignments. Mail to Orgn. 8850, Zone 23, or call R. M. Brown, ext. 4004, Aircraft Division. Will pick up at any location.

NORTHROP NEWS

Vol. 31 **No. 5**

Published monthly by Northrop Corporation Employee Communications.

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Editor—Electro-Mechanical Division ..... **Ivy Edmonds**
Editor—Ventura Division ..... **Park Irvine**
Editor—Aircraft, Electronics Divisions ..... **Tom Quintana**
Editor—Precision Products Department ..... **Peter Goodall**
Correspondent—Architectural Systems ..... **Dale Albee**

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3901 W. Broadway, Hawthorne, Calif. 90250
Telephone: (213) 675-4611, ext. 4273

Eighteen Division Employees Eligible for Service Awards

Month of May recipients of service awards in the Electronics Division total 18 with Frederick A. Nice, senior engineer, heading the list as the "senior" man with 25 years of Northrop service.

Others are: 20 years — Robert K. Cobb, Benjamin R. Donnelly; 10 years — Alwyn L. Nelson, Abraham Osborn, Bella L. Nix; 5 years — Faro J. Manzella, John F. Yaccarino, Albert J. Schewe, Alfred R. Blanco, John E. Swistok, Roquetta T. Stamps, Robert J. Luce and Sandra L. Clifford.

Recipients from the Berkeley Scientific Laboratories, Hayward, are: 5 years — Steve Bach, Jeff Baechler, Bill Eldridge and Ollie Workman.

DONALD M. Weaver, manufacturing engineer, Electronics Division, was recently re-elected to the Centinela Valley Union High School District School Board. Mr. Weaver has served on the board since 1965 and is currently board president. He is a 21-year veteran of Northrop.

CAMERA CLUB

Camera Club members will hold their monthly meeting Tuesday, June 12, in the NRC Clubhouse with Tim Mothersell of the GAF Corporation addressing the group and presenting a slide and movie presentation.

BSL Golf League Starts Match Play

The newly formed BSL Golf League initiates match play Monday, May 21, at the Skywest Golf Course.

The league will play each Monday for 18 weeks at the conclusion of which individual and team awards will be presented.

League members include: Bill McCreary, president; Dave Acao, John Barrett, Clyde Coller, Gary Foster, Vic Gausepohl, Fentress Hall, Ed Klein, Ken Lame, Martin Latona, Nelson Owens, Mark Reisinger, Gary Taylor, and Mike Turney.

NRC TENNIS CLUB FORMING PLANS

The Electronics Division Tennis Club is being reformed and already has plans for an instructional clinic and tournaments to begin shortly.

Interested personnel should contact Sharon Swearingen, ext. 511, Arnie Moore, ext. 825, or Maxine Lewis, ext. 635, Hawthorne, for exact meeting times and locations.

DISNEYLAND NIGHT IS THIS WEEKEND

The deadline is approaching rapidly for employees to secure reservations for the 10th annual NRC Night at Disneyland scheduled for this Saturday night, May 19.

The admission price of $4 (children 2 years and under free) includes admission to the park and unlimited use of all attractions, with the shooting galleries excepted, in addition to live entertainment and dancing.

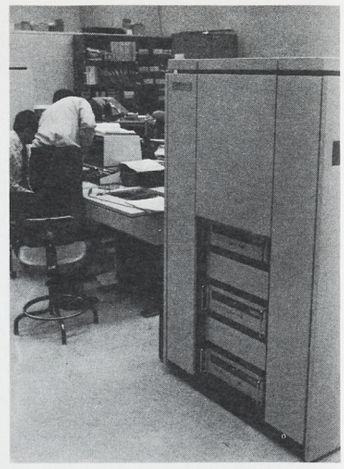
No tickets will be sold at Disneyland, so you are urged to contact Personnel Activities today!

BASKETBALL

The Electronics Division basketball team won third-place in the first annual All-Northrop Basketball Tournament held at Leuzinger High School and hosted by the Aircraft Division.

Electronics team members were defeated by the Electro-Mechanical Division in the opening round, 55-24, but bounced back in the second round for a 59-48 win over the Ventura Division.

Team members were Jim Wood, Ralph Brown, Otha Stubblefield, Maurice Jackson, Pete Weise, Lowell Duberke, Pete Sutherland, Floyd Wright, Ed Subia, Pat Hagiwara and Victor Huang, coach.



FUNCTIONAL TESTING personnel in the Hybrid Laboratory will have portions of their work computerized when the Fairchild Sentry system is fully implemented within the department. Once in operation, the computer will save procedural steps for the technicians.

HYBRID GROUP — Proves Efficient

(Continued from page 1)

Development Group at Hawthorne has come a long way from that early pilot line of the sixties to a profitable, vital section of the division today.

Through the implementation of needed equipment and addition of key personnel, the output of cumulative monthly shipments reached an all-time high of 1038 at the end of April as compared to less than 100 at the end of December 1972.

With the addition of a Teradyne computer controlled laser trim system assemblers are able to reduce the trimming time of the substrates from an average of 15 minutes to 10 seconds. Thus, in conjunction with other hybrid production technology, the output of units per week has increased to over 200 average per week.

Fred Dengler, general foreman, pointed out that the addition of a Fairchild Sentry computer in the Funtional Testing section of the lab will further enhance the output of the lab to well over 500 units a month decreasing the throughput time as well as speeding up the existing delivery schedule.

Improvements are still being made within the laboratory with plans to convert the existing laboratory into a clean room.

In an effort to conserve precious metals in the substrate manufacturing phase, pattern plating is presently being used to reduce gold consumption 20 per cent.

NRC BOWLERS SURVEY

Please fill in this form and return it to your league secretary, bowling commissioner, or NRC.

1. **Do you bowl?**
   ( ) Weekly ( ) Monthly ( ) Currently not bowling
   ( ) Northrop leagues ( ) Other league ( ) Mixed 4
   ( ) Mixed 5 ( ) Men's 4 ( ) Women's 4 ( ) Peterson Point
   ( ) Other
2. **League team entering average?** _____
3. **Do you prefer?**
   ( ) Handicap league ( ) Scratch league
4. **Years you have bowled?**
   ( ) 1-2 yrs. ( ) 3-5 yrs. ( ) 5-10 yrs. ( ) over 10 yrs.
5. **Distance from home to lanes?**
   ( ) 1-2 miles ( ) 3-5 miles ( ) over 5 miles
6. **Highest league fees you've paid?** _____
7. **Last tournament bowled in?** _____
8. **Interested in a Christmas or winter tournament?**
   ( ) Singles ( ) Doubles ( ) Team event
9. **Bowler surveyed is:** ( ) Male ( ) Female Bowling average _____
   Age range: ( ) 19-25 ( ) 26-35 ( ) 36-45 ( ) 46-55 ( ) over 56.

Signed _____
Optional

MONITOR OCCUPATIONAL SAFETY AND HEALTH

THEY DO MORE THAN WEAR A BADGE

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 31, No. 6 | June 1973

BSL Awarded BDS Contract

Berkeley Scientific Laboratories, a subsidiary of Northrop, has announced the acquisition of a contract from Virtue of California, manufacturer of dining room and dinette furniture, for the purchase of an automated business data system.

The BDS 2000 system produced by BSL's Business Data Systems Division, Torrance, will enable Virtue to completely automate their sales order processing, production scheduling, and shipping and billing operations. Other features of the system include automatic generation of work-in-process-tickets, law labels, and various sales trend reports.

Consisting of a minicomputer, disc drive, high speed printer and video control terminals, the BDS 2000 can be immediately utilized without the necessity for time consuming changes to present business procedures.

"The BDS 2000 system is both economical and well-suited for the small and medium-sized companies for which it was designed and is tailored to each customer's specific requirements," said A.T. Migliori, manager, BSL Northrop, Torrance.

PRINCESS Chris Jalloway of Torrance helps welcome BSL Northrop to its new facility in Torrance as David N. Ferguson, BSL president, Ross A. Sciarotta, mayor pro-tem, and Bud Babcock, president Torrance Chamber of Commerce, assist.

BDS Division Opens Facility

Northrop's Berkeley Scientific Laboratories' Business Data Systems Division moved into its new facility in Torrance June 13, with BSL president David N. Ferguson joining A.T. Migliori, manager, in inaugurating the 12,000 sq. foot facility.

Conducting the ribbon cutting ceremony were Mr. Ferguson, Torrance Princess Chris Jalloway, Councilman Ross A. Sciarotta, mayor pro-tem of Torrance, and Bud Babcock, president, Torrance Chamber of Commerce.

Following welcoming remarks by Mr. Ferguson, the visitors were given an informal tour of the facility and served refreshments.

The Business Data Systems Division designs and markets customized data processing systems for commercial and government users.

Employees Earn Diplomas

Seventeen members of the Electronics Division have been graduated from the First Aid course conducted by J.J. Rahiya, Safety and Plant Protection representative. Graduates of the 10 week course are: First shift-I.J. Bell, Miriam Crawford, D.B. Herron, W.A. Jackson, D.L. Johnson, Joan Jones, R.J. Kasmar, E.L. Kennedy, R.E. Paramore, J.W. Nygard, C. Wildes, and P.J. Zulueta, Palos Verdes. Second shift-E.K. Lee, and J. Yacabowich, Palos Verdes. W. Webster, C.J. Chapman, and W.R. Kandtsky, Western facility.

DIGISPLAY made a highly successful appearance at the National Aerospace Electronics Convention held in Dayton, Ohio. Developed by the Electro-Optical Dept., Palos Verdes, DIGISPLAY was the featured exhibit of the Electronics Division at the annual convention with its configuration in the Digisight weapons system also portrayed. More than 500 commercial and military conferees viewed the Northrop display directed by Robert Miller, Business Development Manager, and listened to a lecture on DIGISPLAY by Dr. J. R. Rusk, chief, Applications and Analysis Group.

Mr. Rexroad Will Address Club Meeting

The Electronics Management Club meeting will be held Wednesday, June 20, at Lococos Restaurant in Manhattan Beach beginning at 5 p.m. Guest speaker for the evening will be Brig. Gen. Vorley M. Rexroad, USAF, (retired), who has served on the Senate Committee on Appropriations for the past 10 years and is presently advisor assigned to Senator Mike Mansfield, Senate Majority Leader. Mr. Rexroad will address the group on the Politics of Appropriations.

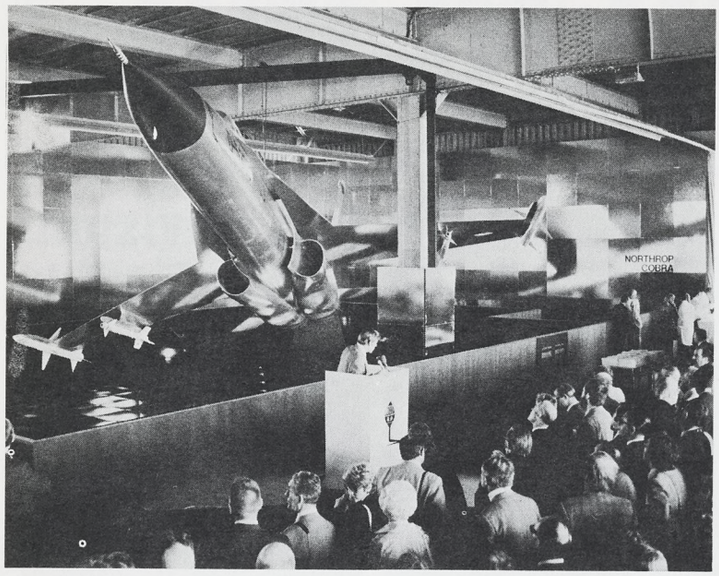
Division Host To Students

Three coeds from Leuzinger High School took part in the Electronics Division's Student's Business Day held annually in conjunction with local schools to give secretarial and clerical minded students a chance to work with industry.

Connie Martin, Beth Grounds, and Rae Peterson were greeted by Lore Krumreich, personnel placement representative, beginning the day long program and were then

(See CAREER, page 8)

LOIS BLACK, administrative secretary, left, offers helpful tips of the trade to Leuzinger H.S. coed Connie Martin.



CROWD WATCHES UNVEILING OF COBRA IN PARIS

FIRST PUBLIC VIEWING

Cobra Shown at Air Show

The Northrop Corporation's Cobra Tactical Fighter, an aircraft originating in the United States with the intention of having the aerospace industries of other countries undertake roles in both its development and production, was publicly unveiled for the first time at the 30th Paris Air Show.

Presenting a full-scale, 53-foot engineering model of the Cobra, Northrop President Thomas V. Jones said the multi-national development and production planned for the aircraft represents "a practical fusion of the advanced technology and manufacturing resources available in the United States with the research, technical and manufacturing skills and facilities found in European and other countries.

"By developing the Cobra together and producing it together to provide a specialized aircraft weapon system suited to the individual defense requirements of a number of countries we will help meet the industrial, economic and technological goals of those countries as well as their military needs," he said.

Different Approach

Mr. Jones said that several countries had sent evaluation teams to the United States to study the Cobra. He pointed out that this independent consideration of the Cobra by a number of countries, reflects a fundamental difference between the Cobra Program and the conventional multi-national approach, in which a number of countries attempt to establish their common requirements and then design an aircraft to meet those needs.

The twin-engine, twin-tailed Cobra will fly at speeds of Mach 2 and, more important for its role as an air-to-air fighter, will have higher acceleration and will be 50 per cent more maneuverable than any other operational fighter in the air today.

Northrop adapted many of the business aspects of the commercial airliner program into the Cobra Project, representing an innovation in military aircraft. Like a commercial project, Northrop's intention is to amortize the development and tooling costs over several hundred aircraft.

Rex Barnes Wins Mechanics Award

An avionic technician for Northrop Worldwide Services, Inc., a subsidiary of the Aircraft Division, was honored by the Federal Aviation Administration recently.

Rex R. Barnes, of Enterprise, Ala., was named winner of the FAA's General Aviation Mechanics Safety Award.

Mr. Barnes was chosen for his work in designing and developing a portable test unit which can be used to check the transmitting capabilities of the proximity warning device on aircraft. The device can be used right before takeoff.

NAS Holds International Conference for Licensees

Northrop Architectural Systems, City of Industry, California, hosted an international conference of representatives from companies licensed to manufacture Arcadia Products developed by NAS, according to James E. Ware, company president.

The visiting group included representatives of licensee companies in England, France, Japan, Mexico, Norway, Sweden and the United States.

Northrop Architectural Systems, a subsidiary of Northrop Corporation, is one of the oldest and largest producers of architectural aluminum products. The company designs and manufactures aluminum curtain walls, sliding doors and windows, and store front metal. The conferees manufacture and sell the same products within their international trade zones.

The three-day conference was planned as an interchange of ideas and discussions of operating techniques, new product reviews, and future plans of both Northrop Architectural Systems and the licensees.

The conference concluded with a tour of the Northrop Corporate headquarters, Los Angeles, including several noted buildings featuring Arcadia curtain walls, and, finally, an evening at Disneyland.

Joyce Carver in Secretary Contest

Joyce Carver, Corporate Communications, placed second in the National Secretaries Association contest for the secretary of the year in Southern California.

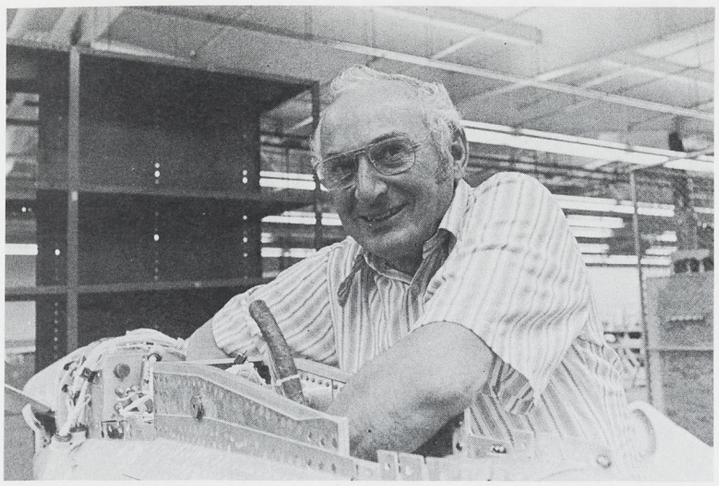
Joyce represented her Inglewood Airborne Chapter as president and competed with secretaries from 40 other local chapters in the contest judged by college professional administrative experts at the Los Angeles Hilton, April 28.

VISITORS and hosts pause for picture during conference at Disneyland Hotel, Anaheim.

Page Makes System Study

The Potomac Electric Power Company has contracted with Page Communications Engineers, Inc., Vienna, Va., a subsidiary of Northrop, to perform a microwave system study that will develop traffic requirements and design criteria, evaluate the performance of the existing communications system and develop a fundamental plan for system expansion and improvements.

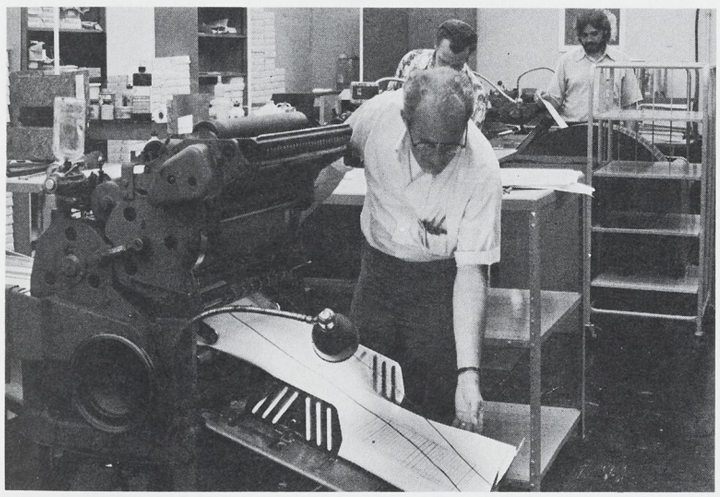
System measurements will be made to select portions of the system for modification to support increased communications requirements, and Page will prepare a fundamental plan to coordinate the development of the PEPCO system.



SAM MANNINO, developmental mechanic at the Ventura Division, works on a new target drone during the second shift at the division.

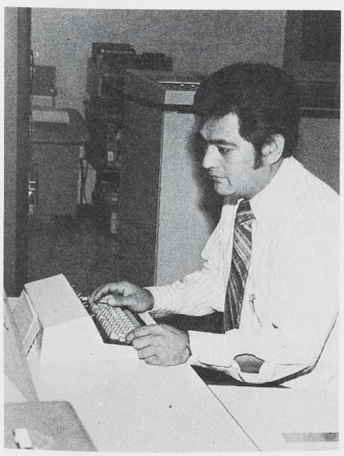
Northrop Activities Continue Long After the Sun Has Set

When the sun goes down work goes on throughout the widely spread activities of Northrop. In night shifts, hard-working and dedicated employees continue the work begun by their daytime partners, contributing to a steady flow of work that is one of the bases for Northrop's splendid reputation for quality products, produced on schedule with no cost overruns. Here the camera catches a few glimpses of representative night shift operations in some of our divisions and subsidiaries.



'READY TOMORROW MORNING' is the deadline often given to the Electro-Mechanical Division's Reproduction Services. Failure to meet such deadlines could mean late proposals and reports — so Gus Grijalva, Repro/Photo manager, has swing shift crews to meet these rush requirements. Here Chet Stafford, foreground, Owen Mincey and Mike Mills work through the night so that an urgent job will be 'ready tomorrow morning.' (Photo by Pete Van Der Kramm)

BYRDA EVANS, left, and Marge Anderson, Manufacturing Assembly Operations, contemplate a procedure during normal night shift duties at the Electronics Division, Hawthorne. (Photo by John Lewis)

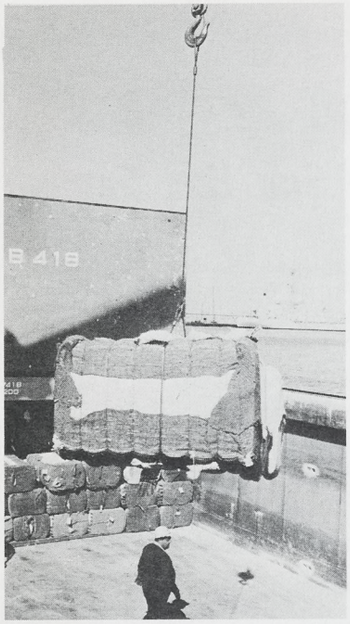


CLIFF BAYUGA, Numeric Control programmer, Aircraft Division, Hawthorne, keypunches Numeric Control program changes for automated milling machines as part of his second shift duties in the computer terminal area.

ANDY DES ROSIERS is a toolmaker during the second shift for gyroscopes and accelerometers manufactured at the Precision Products Department, Norwood, Mass.

FORKLIFT operator Mike Lemon, swing shift, performs his duties in the Shipping Department at Northrop Architectural Systems facility in the City of Industry.

FIBERGLASS roll is adjusted prior to use in 'laying up' another LASH barge at Northrop Hueneme. Adjusting rolls are Armando R. Alonzo, top, and Peter Martinez. Both men work second shift at plant where the giant barges are constructed.



HEAVY, HEAVY hangs over the head of the apparently unconcerned man beneath the bale of cottom being loaded into a Northrop Hueneme fiberglass LASH barge recently. Barge was one of a number which were loaded and later taken abroad a Pacific Far East Lines LASH freighter from Port Hueneme.

ANNUAL REPORT AVAILABLE SOON

The employees' annual report summarizing Northrop activities during the past fiscal year will be made available to all employees during the month of June through each department clerk according to Dave Davidson, Corporate administrator, Equal Employment Opportunities.

Included in the pictorial history of Northrop activities around the world are interesting facts and figures as well as a personal message from Thomas V. Jones, president.

"After awhile this place grows on you, Fred . . . why, I'll bet you can barely

. . . .tear yourself away. . . .!"

Zeider Zee Holds Secrets to Missing Americans and Aircraft from WW II

Ghosts from the past are being resurrected piecemeal from the swampy marshlands of the slowly draining Zeider Zee. Two hundred and thirty famous fighters and bombers of World War II which crashed into the Netherlands waters have been uncovered as the waters recede in the continuing dike construction and land reclamation program of the Dutch Government, according to Lt. Colonel A. P. DeJong, chief of Information, Royal Netherlands Air Force, who is in charge of the military equipment and personnel identification project now under way.

Original efforts were directed only at clearing away the wreckage of what are estimated to be 7000 aircraft in order to prepare the land for cultivation, but the government quickly realized that a service could be performed for relatives and loved ones of the aircraft crews who perished in those thousands of bombing and strafing runs directed at the military targets of Germany.

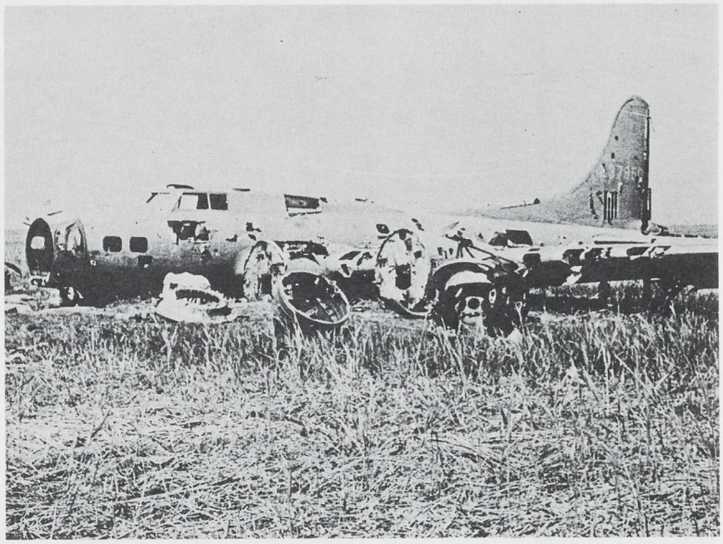
Extensive record searches and analyses are now under way to identify the remains of every individual crew member discovered in the wreckage, and to notify the U.S. Government of each identification. Thirty-four men have been positively identified so far, of the approximately 1200 listed as missing in action in Holland.

The first step in the aircraft identification process is helicopter surveillance of each crash site to determine direction of flight and general condition of the craft.

As water levels recede, Colonel DeJong's men, wearing snowshoe-like footwear to prevent their sinking into the mud, examine the wreckage for live bombs and ammunition and to determine if any of the crew remained aboard. Painstaking biological and anatomical research follows in order to positively identify any remains.

Surprisingly, full oxygen tanks, fully inflated tires, operable gunnery (after cleanup), live ammunition and live bombs are common finds among the wreckage.

Ultimately, most of the aircraft which went down in Holland during those dark days of 1941 to 1945 will be recovered, says Colonel DeJong, thus closing another chapter in the successes — and failures — of United States military aircraft around the world, and eliminating some of the questions concerning our "missing in action" in World War II.



THIS U.S. 8th Air Force B-17G crash-landed on 10 February 1944, in the Northeast portion of the Zeider Zee. Nicknamed "DINAH MIGHT", it belonged to the 452nd Bombardment Group, 45th Combat Wing, Station Deepham Green, England, and was shot down when returning from a raid on Brunswick, Germany.

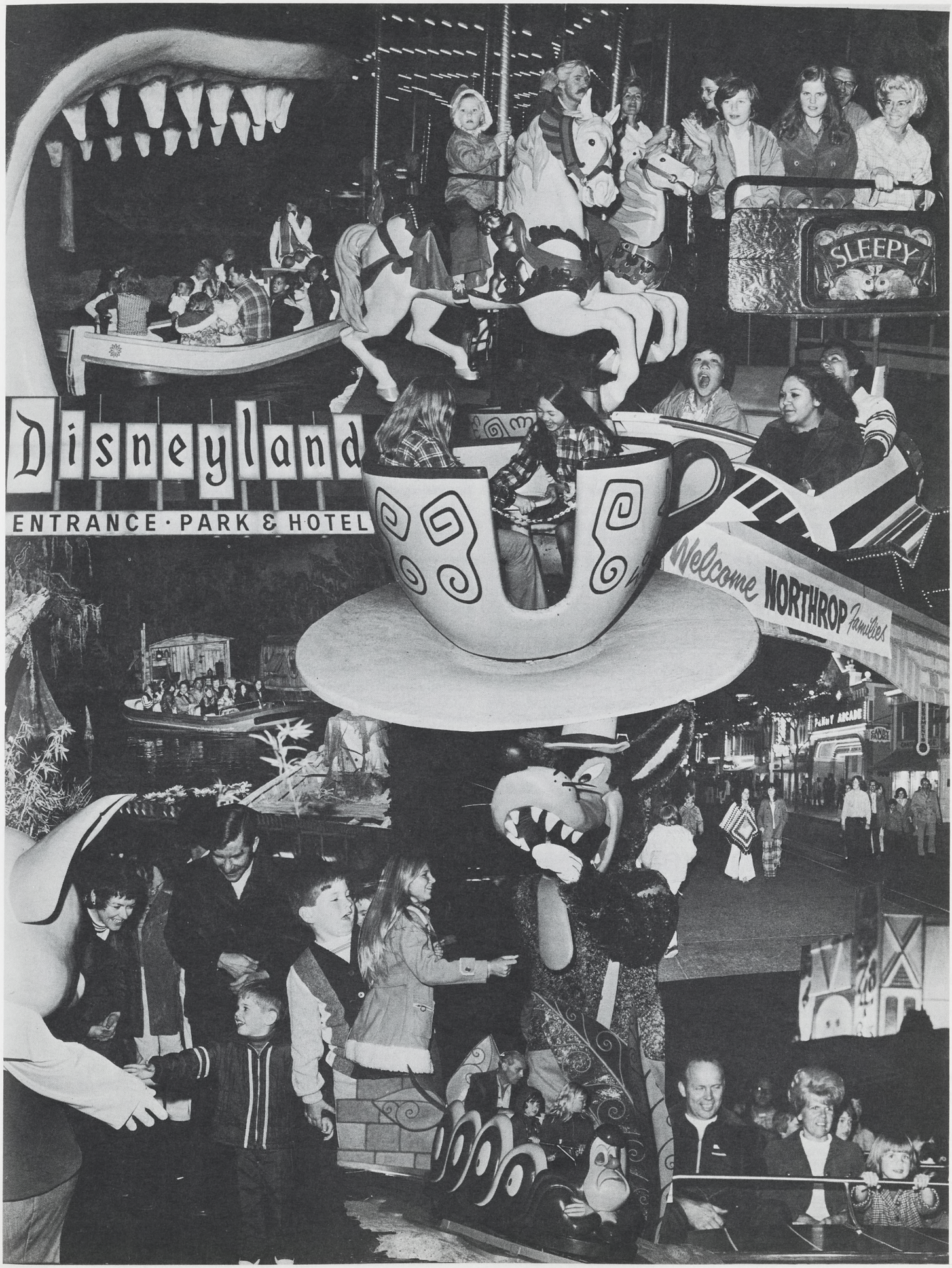
Kay, Alexander Attend Meeting

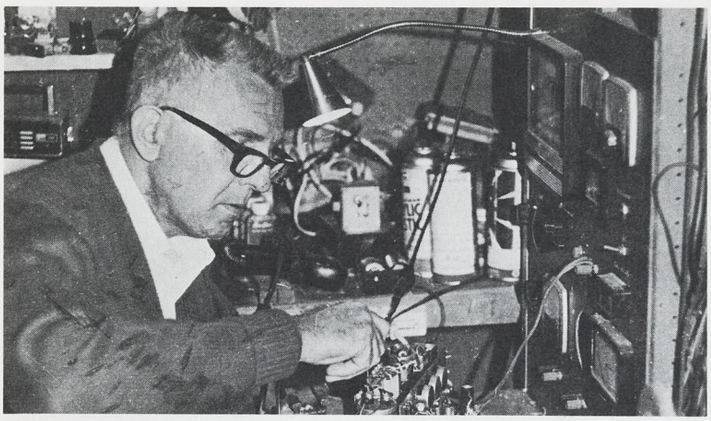
Two Northrop people were involved in the recent joint meeting of the Engineering Data Management and Computer Aided Design Technology Sections of the American Ordnance Association in Los Angeles. They are J. R. Kay, Electro-Mechanical Division—Design Configuration Management, and C. L. Alexander, Eastern Operations Dept., Northrop Services Inc.

Mr. Kay was program business manager. He previously served the association as business manager at five annual meetings and program manager at two.

Mr. Alexander spoke on changing configuration management policies. His discussion covered varying industry points of view and the impact these changing policies have on contract data requirements.

CADET HENRY C. OBERING, center, receives the Northrop Flying Instruction Program award during awards ceremony at the University of Notre Dame. Extending their congratulations are, left, Colonel Joseph Falvey, professor of Aerospace Studies, and Captain Howard T. Hanson, Flight Instruction Program officer, USAF. Mr. Obering will enter pilot training in October.


Disneyland
ENTRANCE · PARK & HOTEL
SLEEPY
Welcome NORTHROP Families
ARCADE



LONG HOURS of trial and error testing are put in by Dan Winters in his workshop/-garage where many of his electronic associated inventions have originated.

Dan Winters' Inventions Save Lives, Aid Astros

From tinkering in his own garage-workshop to setting up his own business manufacturing reed relays and printed circuits, Dan Winters, Operational Support Maintainability engineer, Electronics Division, has been inventing electronic associated products for over 30 years.

His improved reed relays and printed circuits have played major roles in the Apollo program as well as current military defense programs.

Dan began his inventing career at the age of five when he invented an all-electric turn signal system for his father's 1924 Hudson Super Six. His father sold the rights for the system to a Detroit car manufacturer for $50!

With 18 major electronic associated patents to his name, Dan has designed and developed over 500 different types of reed relays for commercial and military customers.

Numerous part and circuit designs as well as tools for use in the electro-mechanical field are typical of Dan's performance with Northrop and his subsequent awards and special commendations bestowed by management.

Among Dan's more successful electronic inventions are: Neon Electric Sign Display, Electronic Organ Reed, Automatic Fire and Burglar Alarm Detection System, Transistorized DC Regulated Power Supply, Transistor Artificial Larynx, Wireless Intrusion and Detection System and Proximity Motion Control for Overhead Cranes. The latter invention has been credited with saving the lives of hundreds of workers around the world who work around high tension wires with heavy equipment such as cranes.

One of the most significant inventions to come from Dan's workshop can be observed along any highway in America at one time or another. "Blinky," the automatic neon road safety device that sits atop construction barriers and flashes a yellow caution sign to motorists, was his creation in 1955.

As for the future, Dan has plans to have and operate a research and development laboratory for his many ideas.

NAS ANNUAL PICNIC SET

The annual Northrop Architectural Systems employee picnic is scheduled for Saturday, July 7, according to Dale Albee, Industrial Relations director.

Swiss Park, Duarte, is the site of this year's affair, and tickets will be distributed to NAS employees approximately July first.

Galileo Will Be Replaced

The House of Representatives' Science and Astronautics Committee has approved replacement of the NASA Convair 990 "Galileo" aircraft lost in an accident at Moffett Field, Calif., in April.

The 990 was based at Ames Research Center, and maintained for NASA by a unit of Northrop Services Inc.

Important programs already scheduled include its use as a command aircraft for the 15-nation Global Atmospheric Research Project in 1974, studies of low frequency radar mapping, cloud physics in 1974, North Atlantic ice movement and underflights of Nimbus F following its scheduled launch in June 1974.

The committee recommended $5 million be added to the NASA FY 74 budget for the 990 replacement.

Comment . . .

The Northrop News will publish in each issue a selection of letters which, in the sole judgment of the editors, are of the broadest general interest. Remember that the best sources for information about Northrop practices are your "Working With Northrop" booklet or your immediate supervisor.

Letters should be addressed to "Comment, Northrop News, 170/40."

There are many comments from Washington regarding "bridging." A person who works 10 or 15 years for two different companies, with similar activities, to combine the total years for pension.

Now at Northrop we have many people who are on their second or third rehire employment. Some have a total of 18 or more years of Northrop experience and still have only 5 years or less towards a pension.

I was wondering if Northrop would lead the Nation in correcting this fault?

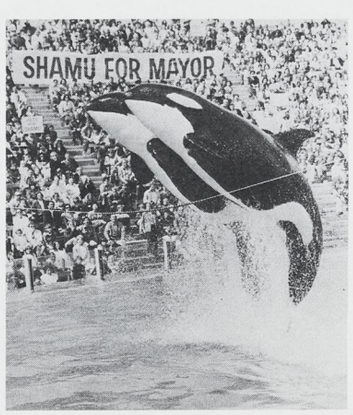
B. Blankenship
Aircraft Division

The Company's concern with the loss of pension benefits resulting from an employee having periods of interrupted service was evidenced long before the present newspaper articles and hearings in Washington made pensions a subject of current interest. A major step in this direction was the Company's recognition of the necessity for early vesting of the employee's pension rights. Once an employee is vested, the vested rights can never be lost. Since 1952 the Company has amended the vesting provisions four times, each time to make them more liberal. The Northrop Plans now call for 100% vesting after ten years of service at any age and are among the most liberal in the nation.

As to the present question regarding restoration of lost past service, or "bridging," the Company has also already taken some steps to alleviate this problem.

During the past three years we have amended the Plans twice to deal with this matter. They presently provide that any participant retiring after May 1, 1971, who has lost ten years or more of service with the Company because of termination of employment (for whatever reason), shall have such prior service reinstated and included as a part of his continuous service for the purpose of computing retirement income benefits, if his rehire was within five years of such termination and his employment subsequent to rehire continued at least five years.

From the employees' standpoint, further improvements in the "bridging" provisions of the Plans continue to be highly desirable objectives. However, each proposed additional benefit must be examined from the standpoint of the relative benefit to all employees and from the standpoint of the cost. Retirement Plan costs are surging upward. Restoring all past service, regardless of breaks in employment, would add very substantially to costs. Aside from the problem of whether the Company can take on such additional costs and remain competitive, there is the question of whether some other benefit, helping a larger number of employees, would be preferable – D. E. Lutz, Corporate Director, Retirement Plans.



SHAMU and his wife are off and running in his campaign for Mayor of SEA WORLD. His campaign promises include "two mackeral in every pot" and a whale of a time for everybody coming to see him on Northrop Days, July 21 and 22.

'One Plus' Dialing To Begin in July

Beginning July 14, a new telephone dialing procedure called "one plus" will be introduced to Pacific and General Telephone customers in the greater Los Angeles area. It will change the way calls are dialed to points outside the 213 area code.

At that time, it will be necessary to dial the numeral "1", then the area code, before making directly dialed calls outside the 213 area. For example, if you wanted to call a number in New York now, you would dial (212) 555-2368. After the change in July, you'll dial "1" plus (212) 555-2368.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. California Operations deadline: noon, second Wednesday of month. Precision Products deadline: to Connie Nelson, first Friday of month.

Business advertising will not be accepted.

Vehicles For Sale

Chevelle, 1969, Malibu, $995. 213-670-6084.

Ford, 1965, Country Squire station wagon, auto. trans., p/s, $400. 213-670-4658.

Chevrolet, 1966 Impala, 52,000 mi, $800 (firm). 213-754-3665.

Dune Buggy, st. lic., fiberglass body & top, $650. 213-645-3381.

Motor Home, 1969, 18 ft. Pace Arrow, 318 cu. in. 212 H.P. engine, new tires & brakes, 40,000 miles, $5800. 213-676-2592.

Motorcycle, 74'' Harley, 1960 eng., $1500. 213-671-8890.

Motorcycle, 1972 Honda 450, custom built, $795. 213-398-0377.

Pontiac, 1966, GTO, 389 tri-carb, p/s, 4-spd., positrac, new tires, $625. 213-374-8548.

Chevrolet, 1968, Bel Air, 4-dr. sed, new brakes, p/s, r/h, 71,000 mi, $1000. 679-2786.

Ford, 1965 1-ton, El Dorado chassis mount camper, air, new engine, $2395. 714-774-2779.

Toyota Land Cruiser, 327 eng., 9'' whls., $2300. 213-676-4272.

Motorcycle, 1967 Honda 305 cc, 2,800 mi., $300. 714-894-9517.

Motorcycle, 1967 Yamaha, 100 cc twin, $160. 213-864-0411.

Volkswagen camper, 1969, pop-up, eng. recently o'hauled, $1850. 213-378-1486.

Pickup, 1963 GMC, ¾-ton, w/8' 1969 camper, sleeps 6, many extras, $1295. 213-370-6896.

Mini-Motorhome, 1972 Pride-N-Joy on Dodge chassis, 360 cu. in. V-8, full power, self-contained, 20', sleeps 6, many extras, $8800. 213-679-0710.

MGA, 1958, $450. 213-973-1583.

Motorcycle, Yamaha-MX, 125 cc, many extras, $425. 213-324-5449.

Motorcycle, 1972 Har-Dav, Sportster, 200 mi., $1800. 213-530-5076.

Motorcycle, BSA 441 Victor, many extras, $400. 714-539-5812.

Pickup, 1964 Ford, ½-ton, $750. 213-377-1404.

Corvette, 1962, 327, 4-spd., $850. 213-379-4325.

Volkswagen, 1971, 21,000 mi., under warranty, radio, $1500. 213-377-3858.

Ford, 1965 Fairlane, take over $56 mo. pymts, $850 bal. 213-676-5164.

Buick, 1965 Skylark h/top, V-8, auto., a/c, $825. 714-847-5938.

Mazda RX2, 1972, factory air, AM/FM stereo, console, $3300. 213-325-0143, 213-545-5717.

Plymouth, 1966 Fury III, 2 door h/top, r/h, auto trans, $400. 213-324-8853.

Motorcycle, 1960 Harley Davidson, $1650. 213-676-7007.

Honda MX 50, wide handlebars, Trail 90 carb., $100. 213-274-0589.

Motorcycle, Honda, CB 450, 1200 miles, $1095. Box 60.

Thunderbird, 1966, Landau, full power, extras, $900. 213-375-5078.

Chevrolet, 1952, 2-dr, h/top, powerglide trans., $350. 213-638-1489.

Motorcycle, 1969 Honda Scrambler, $300. 213-451-3863.

Fiat, 1957 1100D, need engine o'haul, $75. 714-646-6589.

Miscellaneous For Sale

Rifle, .243 Winchester Varminter w/15x Varmint scope, ammo & reloading dies, new, $275. 213-363-5821.

Camping Trailer, Kreuger Travel-Aire Viking, 8' x 10' alum., sleeps 3, many extras, $250 or best offer. 213-861-7035.

Knitting Machine, Brother 585 lacemaker, $150. 213-645-7972.

Tablecloth, Chinese, lace, beaut. in ex. cond, $72.50. 213-474-5726.

Camera, 35 mm, SL, reflex Mamiya/Sekor, 1000 DTL, 55 mm/1.4f Lens, 1/1000 sec. focal plane shutter, $175. 714-871-8316.

Exerciser, Walton Belt Vibrator and Slim Master, $100. 714-523-5304.

Miscellaneous For Sale

Rabbits, 2 does, 1 white, 1 grey, $1.00 ea. 213-644-5082.

Lionel toy train set, new, $29.95. 213-756-0585.

Refrigerator, 14 cu. ft. Coldspot frostless spacemaster, bottom freezer, coppertone, w/maintenance agreement, 5 yrs. old, $125. 213-329-9650.

Dress form, Sears "My-Double" type, new, w/cover, $15. 213-379-3300.

Upholstery sewing machine, Singer Model 3115, ¼ hp, $200 or best offer. 213-370-2828.

Mobile Home, in Carson area, 20x43, pets o.k., 2 bdrms, 1 bath, $10,000. 213-775-2068.

Coin Collection, 25% above face value. 213-644-7941.

Kittens (4), black, grey, orange, orange and grey, $3 ea. 213-679-5177.

Mobile Home, 2 yrs old, porch, car port/awning, landscaped, $14,800. 714-529-7756.

Cello, Full Size, imported, Stradivarius style, $60. 213-756-1238.

Amps & Pre-Amps, Heathkit, 1 set, $42.50. 213-376-4831.

Commodes, 2 pecan, $25 ea. 714-776-8065.

Floor Pillows, 4, $10 ea. 213-675-1000.

Swing Set, backyard type, $10. 213-323-3528.

Adding Machine, 100-key manual w/paper tape, Victor, $25. 213-530-5651.

Lawn mower, power, Briggs & Strattan reel, $35. 213-542-4167.

Couch 9 chair, Danish modern teak wood, $50. 213-599-7009.

Camper, 1970 9' cabover, jacks, refrig., oven, $1100. 213-378-7698.

Piano, upright, $150. 213-498-2300.

Furniture & appliances, assorted, $2-$75. 213-370-8119.

Wheelchair, Everest & Jennings, 26 lbs., $75. 213-294-0727.

Books, 105, Blue Chip Stamp, sell in increments of 35 books, $75. 213-377-8508.

China, Lenox Wheat pattern, service for 8, 6 serving pcs., $300. 213-530-4207.

Boa Constrictor, 4' South American, $25. 213-373-7953.

Pictures, 2 27 x 51, desert scene, orange hues, mtn. scene, blue/green hues, $10. ea. 213-676-3050.

Wheel Covers, wire, set of 4, never used, $65. 213-676-2801.

Model Airplane, free flight, Piper Tri-Pacer 135 Enya 15 eng., wing span 54'', 39'' long, $60. 213-327-4385.

Bicycle, boy's Schwinn Sting Ray, 5-spd., $40. 213-377-4623.

Dutch Rabbit, 2 cages, $5. 213-982-1047.

Kittens, 6 wks. old, seal & blue point pedigree Himalayans, papers, $50. 213-475-2233.

Record Player, Magnavox, stereo, 4-spd. changer, twin det. spkrs., $50. 213-289-2361.

Typewriter, Underwood, $35. 213-677-7421.

Refrigerator, Frigidaire, 11 cu. ft., $50. 213-675-5880.

Calculator, Busicom, $60. 213-675-3866.

Tables, 3 dark wood Mediterranean, no-mar tops, $75. 213-679-6192.

Lawn mower, rotary 10.2 cu. in., power, $60. 213-373-5223.

Roll-A-Way Bed, ¾-size inner spring mattress, $35. 213-675-7740.

Mobile Home, 1965 Expando, 18 x 60, in 5-Star Park, Carson, $10,000. 213-830-5225.

Sailplane, Schweizer 1-26A, less than 100 hrs. total time, custom blt. trailer, $5000. 213-323-4935.

Lawn mower, King-O-Lawn 6 mos. old, all chain dr., 18'' front reel, 2 h.p. Briggs & Stratton eng., $95. 213-377-5322.

Bicycle, 20'' girl's 3-spd., $15. 714-523-5315.

Refrigerator-Freezer, 14 cu. ft. white Philco Ford frost-free, $150. 213-641-6322.

Tire Chains, for small car, never used, $7. 213-645-8057.

Griddle, Toastmaster, Teflon-coated, elec., used twice, under warranty, $12. 213-379-4211.

Bicycle, 10-spd. Tansini, ultra-light alum. frame, $100. 213-631-6480.

Mobile Home, 24' x 64' 1972 Viking, special features, $33,900. 213-325-3811.

Cemetery Lots, 2, in Rose Hills, Whittier area, $500. 213-377-6460.

Lamps, 3-way floor-type, walnut & brass, $25 ea. 213-375-9397.

Party Dress, size 9-10, 5'8'' ht., worn once, hot rose, $20. 213-325-2512.

Golf Clubs, Stan Thompson irons, 2-9, wedge, D-4 stiff, $100. 213-545-8146.

Dining Room Set, Hepplewhite, walnut, table w/exp. leaf, 4 chairs, china cabinet, buffet, $100. 213-541-3000.

Golf Club Set, ladies American Lady, $20. 213-379-4517.

THREE NORTHROP Services, Inc. employees receive Goddard Space Flight Center awards for their "outstanding contributions" to the Inner-planetary Monitoring Platform (IMP) test and evaluation program. L to R: B. Bjerk, E. Martin and R. Shuford are congratulated by R. W. Sheffield, NSI IMP project manager.

Wanted To Buy

Trailer for 13' boat. 213-833-2301.

Plastic Boxes, Gillette Trac II shaving cartridge, will pay 10c ea., must not be cracked. 213-328-6579.

Engraving Machine & access., small Pantograph. 213-941-1865.

Free (To Be Given Away)

Kittens, black, half-Siamese with olive colored eyes. 213-324-0910.

Pup, Beagle, 1 yr. old, all shots, male. 213-370-3401.

Dog, Labrador Retriever, 14 mo. old female. 805-483-5644.

Dog, St. Bernard-German Shepherd, female, 2 yrs. old. 213-973-2948.

Puppies, ½ German Shepherd, blk & tan. 213-324-8428.

Kittens, Gray Persian, one with white mask. 213-675-7357.

Lost

Class Ring, Loyola University 1969, red stone, initials DSJ, reward. 213-473-6035.

Earring, 1-pierced, brown cameo, sent/v. 213-670-2592.

Personals

Ride wanted, 7:18 a.m.-4:00 p.m., Centinela & Florence, Inglewood. 213-674-4563.

Belated thanks gang for the wonderful send off you gave me Jan. 31 after 31 years of togetherness. The gifts are perfect and the memories priceless. A special "Thank You" to Elgia King who cares for all, both big and small. I recommend this retirement. Thank you. WALT OSTERBERG.

Ride Wanted, 8 a.m.-4:42 p.m., Hidden Hills to Aircraft Div. 213-346-6255.

We send sincere thanks & appreciation to all of Norman Leece's Electronics group friends at Northrop for expressions of sympathy offered to his niece when Norman passed away. MRS. T. PELC & FAMILY.

Would like to join or start car pool from Orange County along San Diego or Garden Grove Fwys. to main Hawthorne complex, 7:30 a.m.-4:12 p.m., Aircraft ext. 1342, 714-545-1530.

I would like to join flight pool from Orange County Airport to Northrop Hawthorne, 7 a.m.-3:42 p.m., 5 days week, Aircraft ext. 1729, 714-586-2344.

Personals

Want to join or start car pool from Devonshire & San Diego Fwy. to Aircraft Division, 7 a.m.-3:42 p.m. Aircraft ext. 2953.

Ride wanted, 7:30 a.m.-4:42 p.m., morning only, to Hawthorne from Western & Sepulveda, Harbor City, Aircraft ext. 1293, 213-530-1057.

Our sincere appreciation to our Northrop friends for the sympathy expressed at the passing of our beloved sister & daughter, Sherra. ROBIN, TOM, TIM, DEBE, RANDY & MR. & MRS. T. R. GLANVILLE.

Share ride, 8 a.m.-4:42 p.m., Warner Ave. at Edwards St., Huntington Beach to Hawthorne, Aircraft ext. 2707, 714-847-4700.

Ride or car pool wanted, 4:42 p.m. from Engineering Science Center to Lakewood, vicinity of San Gabriel River Fwy. Del Amo, Aircraft ext. 2705, 213-865-2184.

We wish to thank all the friends, & co workers at Northrop for the beautiful flowers & contributions on the passing of our beloved Mother & wife. DONALD. H. JACKMAN SR. AND FAMILY.

My sincere thanks & appreciation to all my friends at Northrop for the flowers & expressions of sympathy on the passing of my father. MARY ANN HUDSON.

For Trade

Rifle, Mod. 700 Remington custom .222 Varmint, reloading equip., trade for SLR camera or paint compressor outfit. 213-835-0717.

Rims, 2 15 x 7 mag whls for Chevy $20 or trade. 213-329-4090.

CIRCUS COMING

Ringling Bros. and Barnum & Bailey Circus, the greatest show on earth, is coming to the Forum on July 29, slated as Northrop Family Day at reduced prices. Contact your Personnel Activities office today.

NORTHROP NEWS

Vol. 31 **No. 6**

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Managing Editor ..... **Rosemary Hussey**
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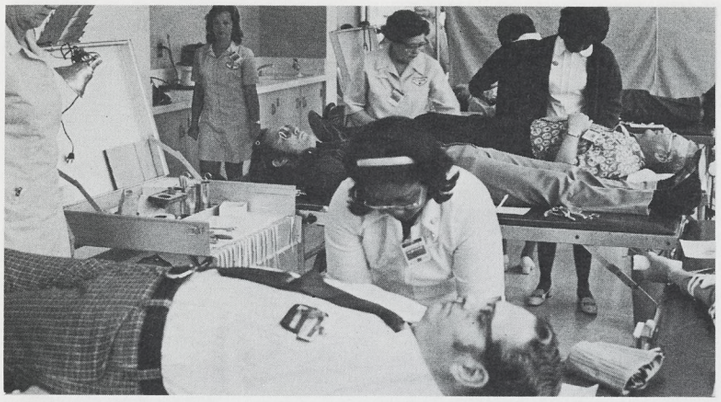


THE BLOOD DRIVE inaugurated the lunchroom facility now open for employees at Hawthorne. Artwork by Steinie Steinmeyer (painted by NRC volunteers) decorates the new facility located next to the patio.

New Lunchroom Opens

Through the joint efforts of Tom Brady, Personnel, Buck Pennington, Security, Steinie Steinmeyer, Graphics, and several NRC volunteer "decorators," employees at the Electronics Division, Hawthorne, are enjoying the comfort and convenience of their own lunchroom which also serves as an after hours meeting place.

Located next to the patio area, the lunchroom offers a refreshing break with its brightly colored walls and wrap-around windows.

Addition of the lunchroom afforded employees the chance to participate in the recent blood drive without having to leave the building.

DECA Honors Culminate a Busy Year for Debra Arehart

Debra J. Arehart, 17-year old daughter of Fred Arehart, publications specialist, Product Support, Palos Verdes, has had a very busy senior year at Lakewood High School.

In addition to being active in numerous on-campus clubs and welfare volunteer groups, Debra is an active member of her school's chapter of DECA (Distributive Education Clubs of America).

At the State Career Development Conference held in Oakland, Debra won second-place out of 332 contestants in the overall competition for Studies in Marketing with a manual she wrote on the jewelry repair business. Combined with her teammates' five first-place trophies, six other second-place trophies, and two third-place finishes, Lakewood also won the Chapter of the Year Manual award for the second consecutive year marking the first time any school had achieved that honor.

Another precedent was set when Debra was asked by her school to represent her chapter along with the first-place winners at the National State Competition in Atlantic City, New Jersey. A $300 scholarship was provided by DECA and Debra made the trip with a tour of the White House and Washington D.C. included in the package.

Even with her tight schedule of activities with DECA, Debra finds time to maintain her high scholastic standing as she has been a member of the California Scholarship Federation all four high school years as well as being on the Principal's Honor Roll and Phi Beta Kappa Award winner.

Debra is also an accomplished soprano in the Lakewood Madrigals and has appeared with them at singing performances at Disneyland, the Queen Mary, San Diego Music Festival, and the United Nations Conference, Long Beach.

Expressing an interest in the field of Nursing, Debra will be attending Long Beach City College for two years with hopes of transferring to USC.

DISPLAYING the second-place trophy she won and the Studies in Marketing Manual she wrote for the DECA state competition is Debra Arehart. Miss Arehart also accepted the finalists plaques for her Lakewood H.S. chapter at the national convention in Dayton, Ohio.

Two Division Members Gain 25-year Awards

Two more members of the Electronics Division have entered the ranks of 25-year service award winners as they mark silver anniversaries in the month of June.

Gordon A. Nelson, project engineer in the C-5 program, and Robert L. Vandeveer, senior engineer, are the two longevity leaders with 24 other employees also receiving service awards during the month. They are: 20 years-June Black, William Jackson, Glen Garrett, Robert Gillingham, Merl Fairchild, Mary Searle, Thelma Chambers, and Vergle Case. 15-years-Frederick McWaid, Aaron Binder, and Robert Ringle. 10 years-Guenter Daub, Jack Fredlund, Margaret Arrigo, Christine Wilson, and Ila Melger. 5 years-Judith Rittscher, Stephen Schmidt, Charles Brewster, Vicki Prohoroff, Herbert Byers, and Arnah Pakes.

John Ferguson Jr., of Precision Products Department, and Florida Jefferson of Berkeley Scientific Laboratories also received 5-year service awards during June.

TWENTY-FIVE year service award winners, Robert L. Vandeveer, left, and Gordon A. Nelson.

New Vice Presidents

Three new vice presidents have been named for Northrop subsidiaries. Fred J. Manzella is vice president, Finance and Contracts for Page Communications Engineers Inc./Iran, and Karl F. McCready is vice president, Technical Systems, also for Page/Iran. In addition, H. Frankenberg is the vice president of Northrop Dakota Inc.

Four Teams Tied for League Lead

After the third week, the Northrop Slo-Pitch League has four teams deadlocked for first-place with 3-1 records. The Bummers, Rogues, Rats, and Battallion lead the circuit with the Spoilers (2-2), Three B's and Road Runners (1-3), and Broncos (0-4) rounding out the standings.

Tonights games have Three B's hosting the Rats at 6:30 p.m., at Eucalyptus Park, and the Spoilers taking on the Battallion at 8:15 p.m., on the same diamond.

CAREER—Students Learn

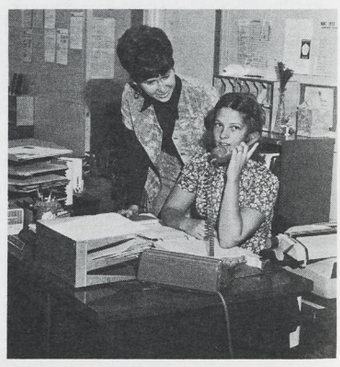
(Continued from page 1)

assigned to sponsors in different departments for on the job training.

Sponsors for the day were Jo-An Leon-Guerriero, Industrial Relations; Gean Lange, Engineering; and Lois Black, administrative secretary.

After a luncheon held in their behalf, the coeds were addressed by Hal Janssen, director Industrial Relations, who thanked the girls for their participation and answered their questions pertaining to working conditions in industry and events of the day.

JO-ANN LEON-GUERRIERO gives a watchful eye as Rae Peterson does some filing during the division's Student's Business Career Day.



GEAN LANGE, left, offers some pointers to Beth Brounds, Leuzinger H.S. coed, during career day for local business-minded students.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 31, No. 7 | July 1973

PROUDLY displaying the TOP/20 Applications Unit recently delivered to JLM International, Mass., for use in development of the YF-17 fire control system are some of the designers and engineers responsible for its development. From left to right are, Ray Kela (seated), Wally Pfeil, program manager, Fred Fischer, Dan Casson, Carlos Chong and Joh Sekiguchi. The actual unit for use in the aircraft will weigh 13 pounds and occupy less than a quarter of a cubic foot of space.

Computer Delivered for Lightweight Fighter

Delivery of the TOPS (Task Oriented Processing System) Applications Unit to JLM International, Mass., for the programming of the fire control system of the YF-17 lightweight fighter was completed in early July according to Wally Pfeil, program manager.

The unit, consisting of equipment cabinet and teletype (Model ASR-33) will be used by JLM for fire control computer programming and later with the Aircraft Division's weapons delivery system simulator and will function with added input/output circuitry.

"An outstanding job was done by all assigned to the program in developing, building, testing, and delivering the special arithmetic unit, input/output unit, and memory for this application unit four months after go-ahead," Mr. Pfeil said.

Basic element of the fire control computer is the TOP/20 computer which is housed in the equipment cabinet of the TAU. It measures less than 10 cubic inches and weighs 11 ounces with a 30-watt power requirement. The TOP/20 is used in an application evaluation configuration and has a control and display panel to permit initiation of operation and technical diagnosis.

An airborne version of the TAU is now being developed at the Hawthorne facility. The completed unit will weigh 13 pounds and will occupy less than a quarter of a cubic foot.

Doctor of Science Degree Conferred On D. N. Ferguson

An honorary Doctor of Science degree was conferred on David N. Ferguson, Corporate vice president and general manager, Electronics Division, by his former alma mater Northeastern University of Boston, Mass., in commencement exercises held during June at the Boston Gardens.

Mr. Ferguson received a bachelor of science degree in physics from Northeastern in 1952 and has completed extensive graduate scientific and management study at M.I.T. and Stanford University.

Mr. Ferguson's affiliation with Northrop began in 1956 when he joined the staff of the company's Precision Products Department in Norwood, Mass., where he held a number of positions including senior engineer, chief engineer, manager of manufacturing, deputy director and later director of manufacturing, director of factory operations, deputy manager of operations, and in 1968, vice president.

(See FERGUSON, page 8)

PICNIC SET

The annual Electronics Division NRC picnic is scheduled for Sunday, Aug. 26, at El Dorado Park, Long Beach.

Appraisal System Initiated

A new performance appraisal system for salaried exempt personnel has been implemented in the Electronics Division.

SEPAS (Salaried Exempt Performance Appraisal System) went into effect March 1 with the primary difference from the old system being that SEPAS covers all levels of supervision and incorporates a goal-setting phase.

Rather than supervisory and managerial personnel having a large number of subordinates' appraisals to accomplish at one time, this system calls upon reviewers to conduct the appraisal

(See SEPAS, page 8)

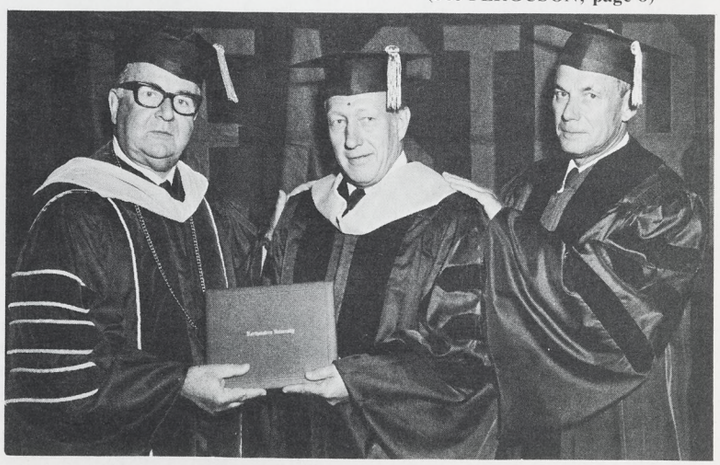
BRAVING the severe weather conditions of high desert living for the past two years have been these personnel conducting the Operational Test and Evaluation phases of JIFDATS at the Electronics Division facility at Edwards Air Force Base. Pictured in front of one of the OV-1D Mohawk aircraft used in the tests are, kneeling, Hermann Rittner, Don Mazzeo, and Dick Petros. Standing, Al Garreffa, Barbara McBride, Art Gandy, Chuck Fuller, Jay Crow. (Photo by Sam Orr)

C.U. Shareholders Receive Dividend

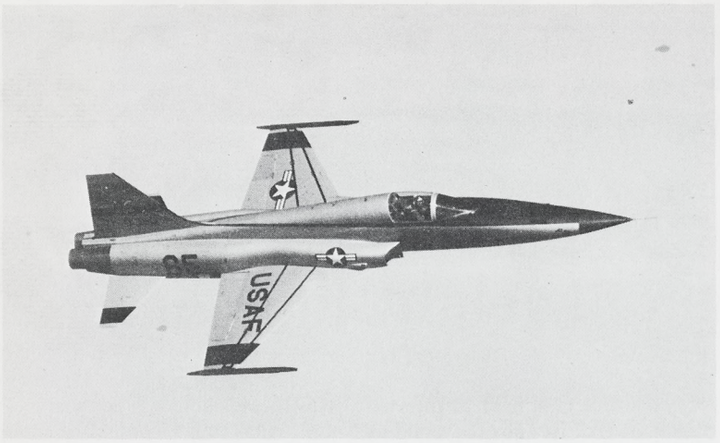
Harvey Cook, president of the Northrop Credit Union, Hawthorne, board of directors, announced the board's declaration to pay a 6½ per cent dividend to shareholders for the first period of 1973. Dividends were applied to the savings account June 30, and appeared on statements distributed in July.

Mary Delaney, secretary - treasurer, attributes the Credit Union's ability to pay better dividends to increases in outstanding loans to members and increases in new members. Continued increase is dependent upon participation of the many good Credit Union members.

President Cook also announced the appointment of R. M. Shave to the Northrop Credit Union board of directors. Mr. Shave comes to the Hawthorne Credit Union board as a representative from the Electro-Mechanical Division in Anaheim. He is replacing James Penrod of the Electronics Division who resigned from the board to accept a foreign assignment within the company.



DR. DAVID N. FERGUSON, center, receives his honorary Doctor of Science degree from Asa S. Knowles, president, Northeastern University, while Donald B. Guy, Northeastern Corporation, adjusts Dr. Ferguson's doctoral hood.



NORTHROP Corporation's show stopper, the F-5E Tiger II, piloted by Bob Hoover, performed 21 aerial demonstrations of 22 scheduled at the Paris Air Show in June with the one sortie canceled by show officials for weather. Altogether, the F-5E completed 43 sorties, including ferry flight, without a grounding write-up while requiring only routine maintenance. Mr. Hoover's only write-up in the aircraft form was, "The world's greatest single-seated fighter!"

First Flight of MQM-74C Is Completed at Pt. Mugu

The first flight of the new MQM-74C target aircraft drone took place at Pt. Mugu, Calif. during May.

The drone completed its first test flight and was landed safely in the ocean recovery zone via its on-board parachute system.

W.E. Woolwine, Corporate vice president and Ventura Division general manager, said there was no flight or retrieval damage. A successful post-flight engine run was accomplished.

During the flight the drone flew to an altitude of 20,000 feet where various level maneuvers were successfully commanded.

Last December, the division received a $5.5 million contract from the Navy for production of the new drone. Flight testing will continue with deliveries to the Navy expected to start later this year. The MQM-74C is expected to become operational early in 1974.

Flight tests are continuing at Pt. Mugu.

FOUR USAF OFFICERS visit the Defense Contract Administration Services District office as guests of Col. Richard E. Griffin, commander, DCAS District, at the conclusion of their Education With Industry tour of duty with Northrop. From left are, Capt. Dick E. Odle, Major Joseph M. Syslo, Capt. David P. Wittnebel, Capt. Roger A. Hohn and Colonel Griffin. Northrop supports this annual program to assist Air Force representatives in developing a working knowledge of industrial methods used in aerospace research, development and manufacture. During the year-long program, the officers spent working time with Corporate, and the three Southern California based divisions. Colonel Griffin, as a captain in 1960, participated in the Education With Industry program on assignment with Northrop. As a result, he continues to take a great interest in the program and hosts each year's participants in a tour and briefing of the DCASR facilities in Anaheim.

Ordnance Association Elects Gurnee Council Chairman

William H. Gurnee, staff assistant to the president of Northrop Corporation, was elected council chairman of the American Ordnance Association, effective July 1.

The council is the elective body of A.O.A., which is a patriotic, educational, scientific and non-profit society of Americans dedicated to peace through industrial preparedness for national defense. The association was founded in 1919 and consists of 44 chapters and 34,000 members throughout the United States.

SOCIAL SECURITY BENEFIT CHANGES

Social Security changes in 1972 provided Medicare coverage to all individuals who were disabled and had been receiving Social Security Disability benefits for 24 consecutive months. This provision went into effect July 1, 1973.

If your spouse is currently receiving Social Security Disability benefits, is under age 65, and qualified for Medicare effective July 1, 1973, please contact the Corporate Employee Insurance Benefits office, Aircraft Division, ext. 2586.

Nigeria Awards Contract to Page

Page Communications Engineers, will furnish, install and maintain a radio broadcast and television station in Port Harcourt, Nigeria. The $9.7 million dollar contract was awarded to Page by the Ministry of Information, Rivers State, Nigeria.

Completion date for the facility is mid-1975 and will include an AM broadcast station, TV station, shortwave station, broadcast and TV studios, standby power, studio-transmitter link, and antennas. The contract also includes a two-year maintenance and training agreement.

THOMAS V. JONES, president, Northrop Corporation, accepts commemorative medallions from NRC representatives. Photo by Jim Haddow.

Northrop Coin Club Presents Medallions to Thomas V. Jones

Commemorative medallions struck in silver and bronze observing the 25th anniversary of the Northrop Coin Club were presented to Thomas V. Jones, president, Northrop Corporation, by NRC representatives on June 22, in Mr. Jones' office.

In accepting the mementos, Mr. Jones noted that the symbols depicted on the medallions were representative of Northrop's achievements in the aerospace industry through the years. One of the symbols depicted a spacecraft returning to earth via Northrop-built reentry systems as did the Skylab I astronauts just hours before the presentation to Mr. Jones.

Presenting the medallions housed in a wooden case were Don Kohler, Industrial Relations representative to NRC, Aircraft Division; Jack Wilson, Aircraft Division Coin Club commissioner; and Dick Reamer, Electronics Division Coin Club commissioner.

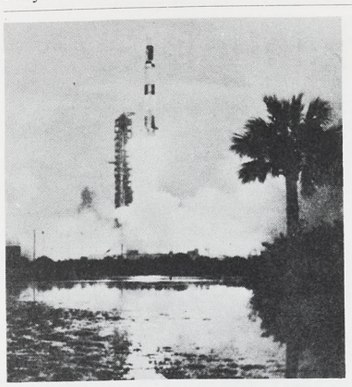
Inscribed on the wooden case were the words, "Presented to Thomas V. Jones in observance of the Northrop Recreational Coin Club's Silver Anniversary, 1947-1972."

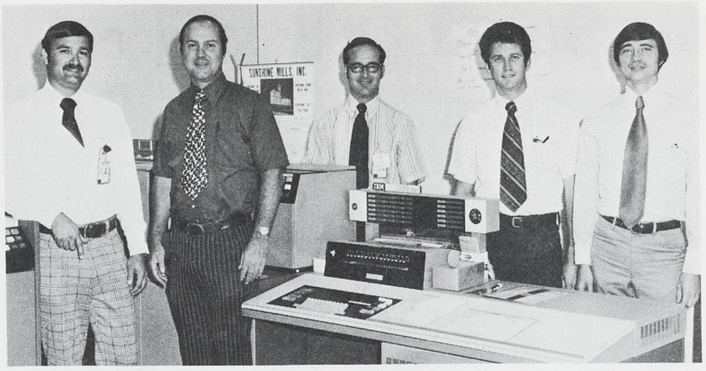
'Financial World' Cites Northrop Annual Report

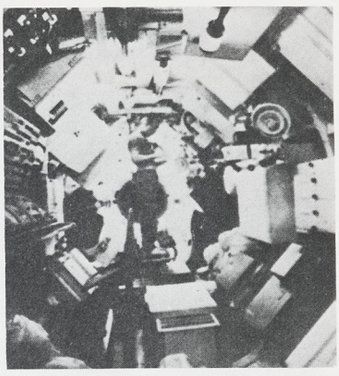
The Northrop 1972 Annual Report to Shareholders has received a Merit Award from "Financial World" magazine.

Content, design and typography are cited in the award, which was based upon a review of over 5000 reports.

Bob Thornton and Charley Barr are credited with preparation of the report, with assistance from a number of other Northrop people.







SKYLAB I rockets from pad, left. Center, members of NSI-Huntsville's Guidance and Mission Analysis Section are, from left, Wayne Revels, Tom King, Bernie Granger, Jim Reeves and Bob Stewart. At right, Astronaut Conrad in the Skylab during training sessions before the flight.

Northrop Aids in NASA Skylab Emergency

In the Skylab I emergency, Northrop employees worked with NASA personnel night and day on projects and experiments to save the orbiting workshop after the accidental loss of a sun shield caused high temperatures to develop inside the spacecraft.

This emergency work was done by Northrop Services, Inc., a wholly owned Northrop subsidiary that provides support to governmental and commercial activities. NSI's work includes management support, complex facility operation services and technical support.

At NASA Johnson Space Center in Houston, Tex., Northrop-Houston personnel under the direction of Project Manager Harry Clagett, worked on design, fabrication and test of flight items connected with the parasol which the astronauts later erected to shield Skylab I from the sun.

Actual deployment of the flight article parasol under vacuum conditions was checked out in the huge vacuum chamber in the Space Environment Simulation Laboratory. Simulated firings were then made of attitude rockets used for control on the orbital workshop to see if the rocket exhaust plumes would have any effect on the parasol after it was deployed by the astronauts.

Several thermal vacuum tests were made to check on the insulation effectiveness of the shield and to permit anticipatory action should deterioration of the parasol material occur during the mission.

In another area, NSI personnel supported NASA in a study of the possibility of toxic gases forming in the orbital workshop due to the high temperatures caused by loss of the sun shield. This included testing the use of vacuum cleaners equipped with purifying filters as possible air purifiers.

Northrop personnel also packed emergency medical supply kits to replace those in Skylab I that may have been affected by the heat. A lengthy test of all Skylab food was made by exposing food to the same temperature profile.

Huntsville Teams

At NASA's Marshall Space Flight Center in Huntsville, Ala., personnel from the Guidance and Mission Analysis Section of NSI's Huntsville facility under the direction of Vice President Jack Barclay, provided two separate teams to support the Skylab effort on a real-time basis. Northrop's real-time Target Up-date Team provided valuable trajectory and targeting data to NASA Operations Support Center during both Skylab I and Skylab II missions. Northrop team members were Bernie Granger, Tom King, Jim Reeves, Wayne Revels and Bob Stewart.

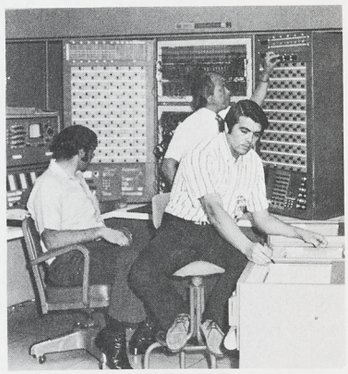
NSI's Skylab Recontact Team composed of David Cobb, John Morris, and Jim Moorehead, was organized to determine if hardware jettisoned from Skylab I would return at a later time and collide with the spacecraft, thus endangering crew and mission. Their studies included the S-II stage rocket, the lost radiator shield and the possibility of having to jettison the emergency parasol if it deteriorated under rigorous space conditions.

Also at Huntsville, the Dynamics and Control Section provided support for the Skylab mission. NSI's primary Skylab team of Ron Joyce, Hershel Woolley, James Edwards and C.T. Yue, were assisted by Ernie Raper, Dennis Freeman, and Dewey McAnnally in maintaining a 24-hour-a-day simulation of the Skylab attitude control system for the first 17 days of the mission and a 12-hour effort from then until the end of the 28-day mission.

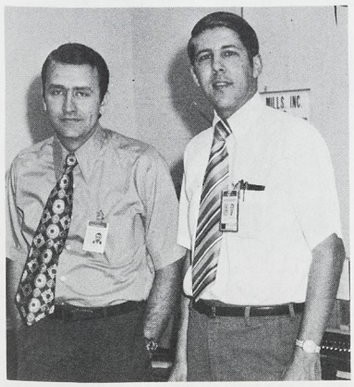
Analysis and simulation of the dynamics of the astronaut-installed solar shield by Bill Jarvinen and Peter Cerny was another area of Skylab support by Northrop-Huntsville.

Successful conclusion of the mission did not end Northrop's participation. The astronauts returned to earth with the help of Ventura Division's parachutes. Then NSI personnel continued their support in evaluating the results of the mission and in preparing for future Skylab and other NASA activity in space.

Northrop Services, Inc., a wholly owned Northrop subsidiary since 1969, reports directly to Northrop President Thomas V. Jones. Frank W. Lynch is NSI president, and William J. Oakes, NSI vice president, heads the company's operations.



DEWEY MC ANNALLY, C.T. Yue and Ron Joyce, in the Dynamics and Control Section, Huntsville, Ala.



DYNAMICS and Control Section's John Morris and Jim Moorehead.

Wilcox Announces Changes in Marketing

Wilcox Electric, Inc., Kansas City based aircraft electronics subsidiary of Northrop, has announced two changes within the company's airborne marketing operations, according to D.R. Dermond, vice president, Marketing.

Terry D. Wilson has been named administrator, Airborne Sales. In his new position, Mr. Wilson will handle dealer liaison and general administrative responsibilities in connection with Wilcox commercial avionics sales.

Mr. Wilson was previously based in Los Angeles, as western regional sales manager for Wilcox.

Larry A. Brown has been promoted to director, Flight Inspection Services, and will be responsible for all work connected with flight analysis of ground based aircraft navigation aids. He will also participate in activities related to commercial sales and marketing of Wilcox flight inspection systems and custom designed aircraft outfitted with the Wilcox systems. Prior to his current assignment, Mr. Brown was flight inspection pilot in Wilcox' Flight Operations Department.

Mr. Wilson

Mr. Brown

What Do You Say To a Lady Mechanic?

Northrop Worldwide Aircraft Services, Inc., with headquarters in Lawton, Okla., employs many people in many locations all over the United States. The following article is reprinted from the Eagle, Vance Air Force Base.

By A1C J. Guy Walton
Information Specialist,
Vance AFB

"What do you say to a lady mechanic?" would be an appropriate question if your job takes you for a stroll along the flightline at Vance.

Women, hired by Northrop Worldwide Aircraft Services, Inc., are working side by side with men in replacing the oxygen tanks and refueling the Cessna T-37s on the ramp. They also aid in the launches and recoveries of the planes along the flightline.

A natural reaction to this would be that these women have joined the men as part of their fight for equality in a male-dominated society. But a second glance will reveal this is not very likely.

One girl applied for the job as a mechanic's helper simply because she was tired of her bank job. Twenty-three-year-old Sharyl Sloup traded banking for the flightline because, "I was sick of working in the basement of a building. I'd been with the bank for 3½ years and felt it was time to get a job where I could go out and meet people."

Another of the women, 20-year-old Jessie Dixon, is an old hand when it comes to planes and engines. "Because I grew up with them I guess," is the way she justifies her desire to work with the noisy birds. "When I was 8 years old I worked with my dad in his car garage. At 13, I was working on planes at Woodring Municipal Airport."

Interest in more than the mechanics of an airplane prompted Jessie to make her first solo flight when she was 17 and get her pilot's license a year later. She is presently working on her commercial and multi-engine aircraft licenses.

The airborne miss also owns her own plane and, of course, does all the work on it. She has overhauled around 20 aircraft engines and has had experience working with sheet metal.

Is Jessie an exception to the "chauvinistic" belief that women cannot do a job as well as a man? Not according to Bill Pope, general foreman of the flightline at the base, who started working in October 1945.

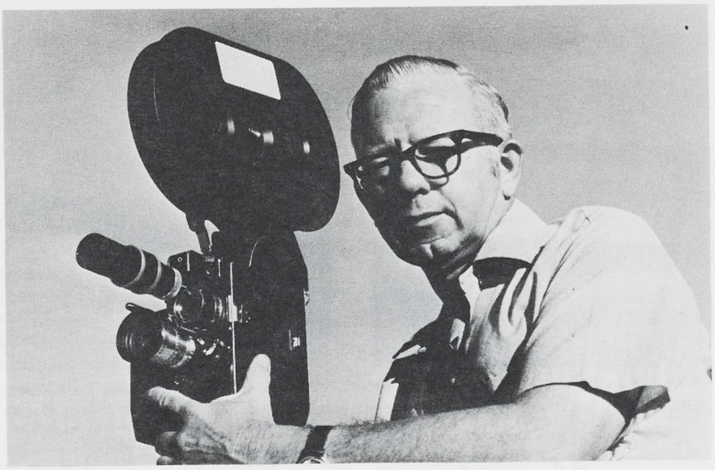
Pope remembers when he was a dock chief in the production line of the maintenance hangar during the time Vance was known as the Enid Army Air Field. In that job he was supervisor for a crew of three women and two men. As far as he's concerned, the women ". . . did as good a job as any man could do. They did their work and didn't expect anyone else to do it for them." At that time, there were women working in the electrical, instrument, radio and engine stations.

Darwin K. Hines, flight leadsman, remembers when he was a boy of 18 "back in the '40s" and went by the air field with a fleet of combines when he worked as part of a harvest crew. "There were women all over the place doing jobs that today are only done by men."

It should really be no surprise, then, to find women working with men on the flightline, particularly since they were doing the same jobs for the government 30 years ago, that men now fill. So, what do you say to a lady mechanic?

"Welcome back!," of course!

SHARYL SLOUP, a former bank employee, now one of the women mechanic's helpers working for NWASI at Vance AFB, performs preflight duties on landing gear assembly of a T-38.



MOVIES made by Ted Citizen strive for realism. Last one took 400 hours of work.

Ted Citizen Makes 'H' Rated Movies to Aid Youth Camps

Ted Citizen makes "H" rated movies.

And "H" means helpful — helpful to underprivileged children, their parents, civic clubs and to society which benefits as a whole from his activity.

Mr. Citizen, who has been with Northrop for 23 years, is Graphic Arts supervisor for Northrop Architectural Systems.

His movies, made on weekends and during his vacations, concentrate on youth activities in summer camps. They serve a dual purpose.

"Many of the children who come to these camps are aimless and without purpose," Mr. Citizen said. "In one, for example, having a police record is a basic qualification for admission. Making these movies of their own activities gives them something to take part in. It arouses their interest as nothing else does.

"The effect participating in these films has upon the youngsters is reason enough for doing them," he added. "But we have another purpose. The films, which are made in color and sound, are shown to civic groups, churches, and social organizations to show them what is being done in these camps and to solicit their support — financial, social and spiritual."

Mr. Citizen got into this work 10 years ago when a camp director complained that he needed some way to relate the camp to people back home. "I've got a movie camera and two hands," Mr. Citizen said. "Can they help in any way?"

The resulting movie they made together was quite successful and launched him on a 10-year program that has resulted in his connection with seven complete films for camps and eight films for his personal use. These films, he pointed out, were cooperative ventures.

"We are not seeking Hollywood artiness," he said. "We strive for realism — to show real people doing real things in a real setting. Our objective is to try to convey the spirit of what goes on in the camps."

The films are not hastily made. The last one took 400 hours of work, and one extended over a two-year period.

"It gives me a full schedule, but it is worth every minute I spend," he said. "The films have demonstrated their ability to help young people come out of their shells and learn to express themselves.

"But they have a personal bonus for us who work on them as well. You can't work with these youngsters and see them begin to crack the shells they have drawn around themselves without getting a spiritual uplift yourself."

PRETTY AS A picture themselves are Angie Rydell, left, and Sheila Bondi, Electronics Division, Hawthorne, as they review the Northrop capabilities display used at the annual shareholders' meeting in May. The display will reach each Northrop facility and subsidiary within the next few months.

Carelessness in Offices Can Be Hazardous

According to chairman of the safety committee Jim Trask, Precision Products Department, no matter how carefully each individual protects himself against accidents, our offices won't be really safe until everyone thinks of his fellow employees' safety.

"When our carelessness hurts others, it's regrettable — even tragic," says Mr. Trask, "but what we do to ourselves is just as deplorable. Some self-inflicted injuries are caused by uncontrollable factors, but plain carelessness usually is the culprit. For instance:

Watch Fingers

"An ordinary stapler becomes an instrument of pain and disablement when a finger gets in the way and the staple goes into the operator instead of the paper. This happens surprisingly often.

"Your chair can let you down badly if you lean back too far and tip it over.

"Filing cabinet drawers can menace the unwary. A secretary was painfully injured when, after filing papers in the bottom drawer, she stood up and cracked her head on the top drawer, which had been left open.

"A lower file cabinet drawer left open is just the right height for someone to trip over — so is a desk drawer. And loosely strewn telephone cords and electrical extensions make dandy tripper-uppers.

"No one wants to become an accident statistic, so how do you avoid that fate?

"Keep your work area clean. A tiny object like a pencil, paper clip, bobby pin or matchbook — even a piece of paper — can cause someone to slip.

"Wipe up spilled liquids *immediately*. A wet floor is especially hazardous.

"Don't leave desk or file cabinet drawers open . . . they're an invitation to collision.

"Using a stapler? Watch the fingers!

"Be careful about leaning back in your chair. It may tip over.

"Don't try to lift anything that's too heavy for you. Get help.

"Avoid horseplay and practical jokes. You may laugh yourself (or someone else) right into the hospital.

"Walk — don't run. Following this simple advice would eliminate many accidents.

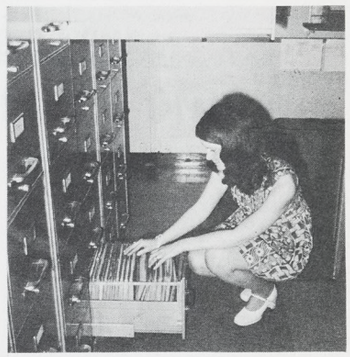
"If you have the two upper drawers of a filing cabinet fully extended at the same time, the cabinet may get top-heavy and fall on you. It's happened many times.

"Whenever you see an unsafe condition, report it to your supervisor and warn your fellow-workers about it. They'll be glad you did. So will you," he concluded.

FILE cabinets fall forward quite easily if three or more drawers are fully extended.

A FILE drawer left open, if only for a moment, can cause a bad accident.

A CORD extending across open floor is an obvious safety hazard.



SHE'LL get a painful bump on the head if she straightens up without looking.

CARLSON ELECTED

Richard A. Carlson, Corporate Data Processing, has been elected as a Member-at-Large of the National Council of Boy Scouts of America as announced by Alden G. Barber, chief scout executive. Mr. Carlson joins an elite group of less than 4000 adult volunteers across the nation that is allowed to vote or serve on regional or national committees.

IS IT NEWS?
CALL EXT. 4273
HAWTHORNE

WALT E. HOLT, manufacturing engineer, Electronics Division, receives his Golden Age Passport from the officer-in-charge of the Hawthorne Post Office, Johnny Y. Maeda, right, and Bob Childress, finance technician, left. The passport is issued free of charge to anyone 62 years of age or older with proof of age and entitles the bearer and anyone accompanying him to enter any designated entrance fee area of the National Park System administered by the Department of Interior or to national recreation areas administered by the Department of Agriculture. The passport also entitles the bearer to use any Federal outdoor recreation area (excluding those provided by concessionaires) at the rate of 50 per cent of the established daily use fee. The Golden Eagle Passport, which offers all of the same benefits as the senior citizen's card, is also available through the post office and is $10.

Radio Club Members Get 'Warm' Reception During Field Day Outing

By Dick Mirko
Aircraft Division Commissioner

Radio hams from the Aircraft and Electronics divisions took part in the 37th annual Amateur Radio Relay League's Field Day, June 23-24, competing against 12,000 hams throughout the United States and Canada.

The 21 Northrop club members set up camp high atop the Palos Verdes hills in the world's largest emergency communications preparedness test and met with unexpected competition from the Palos Verdes fire which came within one-half mile of the camp site and then a raid by the sheriff's office which had received reports of "strange goings on" and funny wire contraptions (antennas).

Later the group was approached with requests of assistance to those burned out by the fire. Two transmitter positions were operated on emergency power continuously during a 27-hour period, covering the radio frequency spectrum of 3.5 to 225 megacycles. A total of 865 two-way communications was established, an increase of 175 contacts over last year.

The field day committee included chairman Jim Jones, WB6WWU; Bob Cobb, W6CFM, Electronics commissioner and secretary; Doug Marston, WB6JCD; and Don Moore, WA6BJJ. Cooks for the weekend were Sue Moore and Pat Fischer.

Club members participating were, Dick Mirko, K6HRT; Roulon Bailey, K6UM; Bill Gonzales, Spud Monahan, K6KH; Capt. Don Fletcher, W6LYY; Chuck Jenzen, WB6BZJ; Ben Russell, W6NYB; and Eileen Ross, WB6QVD.

SETTING UP camp high atop Palos Verdes hills, Radio Club members prepare for annual field day preparedness test.

ONE THAT DIDN'T get away is displayed by Charlie Whiting during the one-week, all-expense paid holiday he won as door prize at the Sportsman's Show. The black marlin weighed in at 229 pounds.

AND GETS HIS FISH

Whiting Wins Door Prize

For a fisherman, Charlie Whiting, Advanced Systems Program Development, Aircraft Division, doesn't seem to be the least bit superstitious. And it's no wonder — Charlie was notified on Friday the 13th of April that he had won the door prize at the Sportsman's Show which he had attended at the Los Angeles Convention Center.

The prize turned out to be a one-week, all-expense paid deep sea fishing trip for two at the Tropic Star Lodge, Pinas Bay, Panama, in the heart of gamefish territory.

Charlie and his wife, Betty, departed Los Angeles Sunday, May 13, aboard a Pan Am 747 bound for Panama City where after an overnight stay and sightseeing tour were flown to the Tropic Star Lodge at Pinas Bay.

Located just 20 miles north of the Colombian border and 100 miles away from the nearest road, Pinas Bay offers assorted gamefish such as black marlin, striped marlin, Pacific sailfish, bull dolphin, roosterfish, grouper, bonita, mackerel and needlefish.

On the first day out, Charlie caught a 229-pound black marlin after doing "battle" with the giant for one-half hour. "Not being an expert fisherman, I took the advice of a friend prior to the trip and practiced an hour each day for two weeks in my backyard pulling on a bucket of sand at the end of my fishing line. It sure paid off when that marlin snagged my line," he related later.

During the following two days, Charlie caught a four-foot dolphin and a 97-pound sailfish which was later made into a trophy for him as a souvenir of his week.

On Friday, the Whitings flew back to Panama City where they stayed overnight and following a shopping and sightseeing tour, departed Saturday evening for Los Angeles via 747.

Reflecting on the "dream week," Charlie's only comment was "When do we go again?"

"I'M SORRY SIR, HE'S ON THE OTHER LINE. CAN YOU HOLD?"

Magazine Honors Electronics Division

The Electronics Division, Palos Verdes, has been honored by the publishers of Esquire Magazine in the July issue with the awarding of an honorable mention in its seventh annual Esquire/Business Committee for the Arts, "Business in the Arts" awards competition for noteworthy Corporate programs in support of the arts in 1972.

The award is presented in recognition of the division's support of the Arts for Fun(d)s Sake for the past seven years which is held on the division grounds by the Palos Verdes Art Association. The division has given cash donations, maintenance support, and utilities and management assistance, to the yearly festival.

Comment . . .

The Northrop News will publish in each issue a selection of letters which, in the sole judgment of the editors, are of the broadest general interest. Remember that the best sources for information about Northrop practices are your "Working With Northrop" booklet or your immediate supervisor.

Letters should be addressed to "Comment, Northrop News, 172/40."

We need a way for anonymous or really private comments from employees to be seen or heard by upper level management, to give insight to operational or production problems, or to call unsatisfactory working conditions to their attention.

Unsigned
Ventura Division

This Northrop News "Comment" feature was designed for just that purpose. Although only letters of general interest are published, all comments received are forwarded to the responsible senior management of the applicable division or subsidiary for reply or action, and comments and questions on any Northrop-related subject are welcome. – J.B. Thomas, manager, Employee Communications, Corporate.

We do not have cafeteria facilities on nights in the Aircraft Division complex. Are there any plans for extending cafeteria operating hours?

R.L. Taylor
Corporate Offices

At present there are not enough employees on night shifts to make cafeteria operations economically feasible; however, the vending carts operated by Food Services cover a wide area, and will be expanded if warranted. – Fred Holp, manager, Food Services, Aircraft Division.

Northrop Variable Speed Training Target on Display at Open House

Several thousand visitors viewed the Northrop VSTT (Variable Speed Training Target) when it was displayed at the annual Open House, July 7 at the U.S. Army's White Sands Missile Range, N.M.

The Northrop VSTT has been developed for the U.S. Army by the Ventura Division. Flight tests got under way this month and will continue through 1974. Following completion of such tests, the Army will determine which of the two new target drones will be produced.

The Northrop VSTT is a highly maneuverable, turbojet-powered, remotely controlled target for anti-aircraft gun crews, for surface-to-air missile training as well as weapons system evaluation.

It is 12.6 feet long, has a 14 inch body diameter and a wingspan of 5.7 feet. It uses a Williams Research turbojet rated at 200 pounds thrust. It can fly at speeds from 250 to 560 knots and to altitudes of 40,000 feet.

Recovery is via a parachute system activated either by a remote command or automatically should a need arise during flight.

TRAVEL WITH NRC TRAVEL CLUB

The Travel Club has scheduled a meeting for the Highlight Tour of Europe on July 20 at 8 p.m. at the NRC Clubhouse, Hawthorne. A final meeting will be held on Aug. 24.

This tour is 22 days, fully escorted, with a departure date of Aug. 31 and return Sept. 21. Cost is $969.

Other tours on the Travel Club agenda are:

The Sunshine Tour of Europe. This is a 23-day escorted tour visiting Spain, Portugal and North Africa which departs Sept. 23 and returns Oct. 15. Cost is $969 and includes all meals.

The Air Fare Only to London departs Aug. 31 and returns Sept. 21. Cost — $239.

A 10-day sea-air cruise to Mexico and Central America will sail from Los Angeles on the luxurious TSS Fairsea on Oct. 26. Places visited will be Puerto Vallarta, Acapulco, Taxco and Mexico City for a cost of $466.

Four-Island Tour to Hawaii at Christmas year-end vacation departs Dec. 22 and returns Jan. 1, 1974. This tour is a 10-day fully escorted trip for $495.

Interested personnel should contact Personnel Activities for brochures and information, Aircraft ext. 2486.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Business advertising will not be accepted. California Operations deadline: noon, second Wednesday of month. Precision Products deadline: to Connie Nelson, first Friday of month.

Vehicles For Sale

T-Bird, 1956, h/top convt., auto. trans., major tuneup, $2495. 213-831-3661.

Cadillac, 1970 Coupe de Ville, air, AM/FM stereo, full power, $4500. 213-478-4600.

Chevrolet, 1969 Nova, 230 cu. in. eng., new clutch & brakes, 73,000 mi. $500. 213-673-3944.

Oldsmobile, 1965 Vista Cruiser, station wagon, fact. air, r/h, $500. 213-676-6187.

Pickup, 1958 Chevrolet, $585. 213-375-5577.

Olds, 1963 F-85 Cutlass, new shocks, rebilt. 4 bbl. carb., $95. 213-542-5131.

Olds, 1965, Model 442 w/console, 53,000 mi., $595. 213-676-2801.

Ford, 1970 LTD, air, full power, radio, $1830. 213-541-5104.

Volkswagen, 1968 Squareback, $850. 213-835-0717.

Ford, 1964 Fairlane, $450. 213-377-1404.

Pontiac, 1970, GTO, p/s, rebilt. eng., $1800. 213-673-3983.

Truck, 1964 Chev., ¾-ton, w/1969 11' Westways camper, self-contained, sleeps 6, $1750. 714-586-2344.

Chevrolet, 1968 van, 6-cyl., auto., $1200. 213-644-5848.

T-Bird, 1970, Landau, full power, $2950. 213-424-5992.

Maverick, 1970 2-dr., stick, $999. 213-328-3306.

Olds, 1968 Cutlass, p/s, d/brakes, a/c, auto. trans., 2-dr. h/top, $1195. 805-495-9736.

Ford, 1966 Country Sedan, 9-pass, station wagon, air, r/h, p/s, pwr. d/brakes, auto. trans., $435. 714-846-1858.

Motorcycle, 1972 Honda 450, 6" ext., bars, $700. 213-398-0377.

Ford, 1971 Torino 500, 302 cu. in., p/s, auto. trans., a/c, $1950. 213-670-9258.

Volkswagen camper, 1963, rebilt. eng. & trans., $650. 213-645-8373.

Impala, 1970 Custom 2-dr., p/s, p/b, a/c, 31,000 mi., $2100. 714-826-0576.

Oldsmobile, 1961 F-85, 4-dr. sedan, $75. 213-676-5164.

Pontiac, 1966 GTO, 389 tri-carb, p/s, Hurst 4-spd., positrac, $600. 213-374-8548.

Corvair Monza, 1966, auto. trans., 50-mo. batt., new eng., $400. 714-524-0140.

Motorcycle, Honda MX 50, raced twice, MX hand. bars, dn. meg., many extras, $100. 213-274-0589.

Miscellaneous For Sale

Toy Poodle, male, 4 mos. old, black w/small white spot on chest, $25. 714-821-8651.

Tire, 8.55x14 Goodyear Power Cushion, used little, $10. 213-375-4747.

Scuba Gear, used 4 times, $300. 213-542-2856.

Police Special, .38 cal., 6½" barrel w/Western quick draw holster & ammo, $125. 213-644-1752.

Tennis Rackets, Masterbilt, $7.50 ea., 213-373-5452.

Outboard Motor, 35 h.p. Evinrude Big Twin, remote controls, 6-gal. tank, recently tuned, $250. 213-434-1795.

Sewing Machine, Nelco zigzag, 3 yrs. old, all attachs. & cams, $150. 213-371-2133.

Boat, 13', oars, anchor, extras, $75. 213-371-5072.

Bunk Beds, mattresses, $15. 213-370-8365.

Bed Set, twin, metal frames, $50. 213-423-1363.

Stove, G.E. elec., coppertone, self-cleaning oven, 1½ yrs. old, $100. 714-826-9468.

Kittens, orange, black, grey, white, $1 ea. 213-679-5177.

Turntable, Garrard Mod. SLX2, $50. 213-644-5105.

Bicycle, 26" men's, $15. 213-834-9446.

Tape Deck, Akai, 280D-SS quadrasonic, stereo, w/sound-on-sound, 2-ch. selection, amplifier, Akai, 8100 AM/FM, 5-way spkr., used 3 wks., many extras, sell as unit, $2000. 714-968-0740.

Tent Trailer, Nimrod, soft-top, sleeps 4, canvas, lght. wt., for compact cars, $350. 714-535-8232.

Mag Wheels, 14"x6", 4 Cragar, fit Ford, 5-lug, $75. 213-677-2338.

Vacuum Cleaner, tank-type, $35. 714-847-4700.

Hutch & Cabinet, solid maple, $99. 213-370-0824.

Bicycle, Schwinn Sting Ray, boy's, $35. 213-722-6213.

Miscellaneous For Sale

Outboard Motor, Johnson, 5 h.p., $50. 213-675-2005.

Wedding Gown, white lace w/veil, size 7-8, pearl emb., $50. 213-272-5042.

Boat, 15' Javlyn runabout, 35 h.p., elec. start, Sears eng., w/12 gal. remote tank & trailer, $435. 714-846-6364.

Car Top Carrier, solid steel bottom, side rails, $8. 213-326-0895.

Mobile Home, 1968 Fleetwood Expando, many extras, air cooler, fenced yd., $5000. 213-630-4700.

Coffee Table, Provincial, $75. 213-634-9557.

Air Conditioner, for V.W., $175. 714-530-3708.

Outboard Motor, Seagull 40, $100. 213-645-3690.

Jewelry, Turquoise, Indian, $1600. 213-379-0030.

End Table, 22"x22", fruitwood, Med. style, $90. 213-326-0124.

Bicycle, ladies Schwinn 10-spd., access., $75. 213-392-2396.

Beds, twin, pr., hdwd. maple w/box springs, complete, $90. 213-641-6741.

Pool, 3'x15' Doughboy, comp. w/chems., $35. 213-635-7843.

Television, b & w, walnut console cabinet, $65. 213-676-3050.

Mobile Home, 10'x53', w/cooler, 10'x17' screen porch, 2 10' awnings & skirting, $3000. 213-630-2312.

Television, Curtis-Mathis, b & w, stereo-record player, 8 yrs. old, $50. 805-495-8041.

Organ, 1967, Lowry Holiday deluxe, French Prov., w/bench, $600. 213-246-6227.

Gun, 12 ga. trap, Browning BT 99, single bbl., 32" full choke, $290. 213-379-3485.

Sailboat, 12', sails & trailer, 1½ h.p. Neptune motor, $200. 213-676-4436, 213-676-5021.

Bowling Ball, 15 lb., $5. 213-323-6840.

Ski Boat, 15', fiberglass o/plywood, 50 h.p. 1958 Evinrude eng., trailer, $400. 714-846-9561.

Golf Sweater, size 42, Alpaca, $30. 213-675-1000.

Piano, Baldwin Acrosonic, solid mahogany, $500. 213-644-1581.

Bicycle, 16" Hedstrom w/coaster brakes & training whls., $17.50. 213-675-0152.

Bicycle, girls' 20", 3-spd. Stingray, 1½ yrs. old, $40. 213-371-8695.

Furniture, Mediterranean, 3 rms., all or part, $260. 213-530-7939.

Console, Grundig Majestic, b & w TV, phon. & AM/FM radio, $75. 213-329-4090.

Porta Crib, all wood, $12. 213-889-8757.

Dinette Set, maple dropleaf w/exts., 4 captain chairs, $60. 213-372-2860.

Refrigerator, lge. freezer, $65. 213-830-8074.

Freezer, 21 cu. ft. upright, $75. 213-375-0017.

Tent, French, 13'x8½', enc. 5'x10' awning, $75. 213-644-3970.

Mattress, full-size, Sears, 527 coils, $10. 213-375-2370.

Wall Unit, 8', antique stain, $150. 213-324-8466.

Supercharger, Judson, for 1200 or 1300 VW, $50. 213-375-8536.

Range, dlx. dble. oven, elec., in fact. crate, $200. 714-847-5429.

Console, Curtis Mathis, stereo, AM/FM stereo radio, record changer, tape deck, maple cab., $100. 213-641-6645.

Mini Bike, Hodaka Ace 100, 5-spd. trans., 9.8 h.p., $175. 213-378-1353.

Shotgun, over & under, 22 l.r. & 410, $48. 213-675-5258.

Diver's Jacket, ¼", med. size, $25. 213-375-8993.

Desks, child's, 2, chair, $7.50. 213-376-4831.

Reducing Table, Stauffer, $75. 213-674-5953.

Room Divider w/blt-in planter & plants, 8 ft. long, $25. 213-541-3000.

Bathinette, never used, $14. 213-924-4525.

Organ, Hammond L100 spinet, lge. sep. Leslie spkr., $750. 714-544-2259.

Camera, EC 35 Olympus, fully auto., $30. 213-328-4128.

Boat, 15' Duracraft, 17' trailer, $300. 213-398-8111.

Aquarium, 5 gal., stand, equipped w/fish, $20. 213-675-6020.

Washer, Frigidaire, near new, deluxe, white, $165. 213-284-2604.

C.B. Radio, Pace 123-23 chan., $109. 213-324-0522.

Camera, Hasselblad system, $1850. 213-835-3869.

Bicycle, Schwinn, collegiate model, girl's 5-spd., access., $80. 213-343-7880.

Travel Trailer, 1972 13' Shasta compact, used once, $1200. 213-679-6982.

Wanted to Buy

World War II aviation items, uniforms, helmets, flight equipment. 213-375-4312.

Bunk Beds, 213-377-7127.

ODYSSEY WAS ended for MQM-74A Buno MQ16257 when it was recovered by the sports fishing boat 'Forget Me Not' five miles off the coast of Kona, Hawaii on May 8. The Northrop drone was launched from Pt. Mugu, Calif. in September 1971 and experienced an in-flight fire. It crashed into the ocean and was considered an operational loss. Members of the Navy's VC-1 received the target on May 12 and upon examination determined the drone to be a total loss due to corrosion and salt water contamination. VC-1 is a Fleet Composite Squadron based at Naval Air Station, Barbers Point, Hawaii and commanded by Commander A.J. Winn. (Navy photo)

CIRCUS

Another Northrop family special is coming soon.

That special day is Sunday, July 29, when the Ringling Bros. and Barnum & Bailey Circus will once again perform at the Forum.

Personals

Carrie Matthews & family, wish to thank all their Northrop friends & co-workers, for the flowers, cards, contributions, & kind expression of sympathy on the passing of our beloved daughter & sister, Sandra Anne.

We wish to thank everyone for their kindness & consideration during my recent illness. JOE RAMIREZ & FAMILY.

Ride wanted, 7:30 a.m. - 4:12 p.m., from 107th & Osage. Aircraft ext. 2586, 213-671-8890.

Thanks to all my friends for the wonderful send-off. MATT CARLISLE.

Our sincere thanks & appreciation for the donations & expressions of sympathy on the passing of my husband & our father, Al Fierce. LOUISE FIERCE & FAMILY.

Thanks to everyone at Northrop who made my job more than just a job, especially those on the Lightweight Fighter & a special thanks to the secretaries for all they did for me, & my mother, Paula. KAREN BOWMAN.

Ride Offered from Fullerton, 7:30 a.m. — 4:12 p.m., near Chapman & State College, room for 2 or 3 passengers, Aircraft Div. ext. 4541, 714-870-8966.

Our sincere thanks to our many friends for their expressions of sympathy & to the NRC Club for the lovely plant upon the death of our daughter. D. L. BUCKEY & FAMILY.

Ride Needed, 8 a.m.-4:42 p.m., Florence Ave. & Lakewood Blvd., Downey, Aircraft ext. 2081, 213-861-6404.

Free (To Be Given Away)

Kittens, black w/ accents, 6 wks. old. 213-676-7766.

Pups, 5 wks. old. 714-962-5166.

Kittens, black, probably Siamese. 213-378-7820.

Guinea Pigs, 4 females & cage. 714-539-5812.

Found

Rings, 2 in Flight Dispatch Bldg. men's restroom, owner to identify, Aircraft Div. ext. 1060, 213-323-4257.

BULLETIN

Any personnel that observed, or have any information, relating to the accident that occurred Monday, June 26, 1972, involving two boys on a motorcycle in Parking Lot 10 located near Crenshaw and 120th St., on or about 12:30 p.m., are requested to contact Duke Randall, special investigator, ext. 2141, Aircraft Division. It is extremely urgent that you reply immediately.

WANTED

The Retirement and Savings Plans office is interested in locating the following persons:

L.F. Adams
C.A. Neher
Victor Marcelini
J.H. Francis
James Whitehead
E.H. Brett
Robert L. Wiley

Contact Retirement and Savings Plans office, Century City, ext. 302.

NORTHROP NEWS

Vol. 31 **No. 7**

Published monthly by Northrop Corporation Employee Communications.

Managing Editor ..... **Rosemary Hussey**
Editor—Electro-Mechanical Division ..... **Ivy Edmonds**
Editor—Ventura Division ..... **Park Irvine**
Editor—Aircraft, Electronics Divisions ..... **Tom Quintana**
Editor—Precision Products Department ..... **Peter Goodall**
Correspondent—Architectural Systems ..... **Wanda Fisher**

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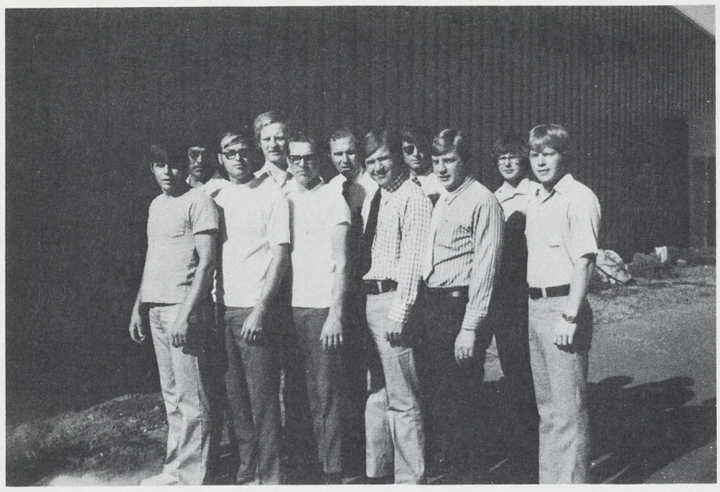
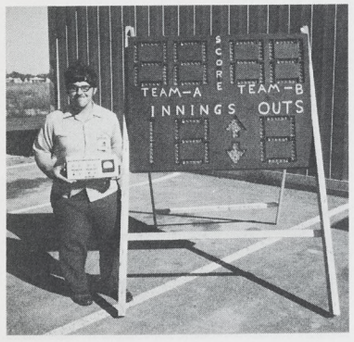


MID-SEASON standings of the New Town, North Dakota, Slow-Pitch Softball League have Northrop Dakota, coached by Roger Frye, running in second-place trailing a strong Stockman's Bar team. Following Northrop is the American Legion and Four Bears Motor Lodge Motel. Team members pictured are: left to right, front row, Larry Lindley, Roger Frye, Harris Berg, Jerry Howell, Lee Finstad and Ken Bloms. Back row, Carson Hood, Tex Rytter, Dennis Markwardt, Dennis Rowe and Jim LaRock.



SHERWIN RAILE, Test technician, Northrop Dakota, displays the electronic scoreboard that he designed and assembled for the New Town Slow-Pitch Softball League which Northrop Dakota is participating in. Sherwin spent over 300 hours of his spare time completing the unit.

HOWARD TO VENTURA

Dr. Vincent W. Howard has been named vice president for Engineering at the Ventura Division in charge of all engineering operations, according to W. E. Woolwine, Corporate vice president and general manager. Dr. Howard was previously vice president and manager of the Electronics Division's Advanced Systems Department and program manager for JIFDATS.

SEA WORLD

Only three days remain for employees to secure tickets for Northrop Days at Sea World coming this Saturday and Sunday at reduced rates for employees and their families. Contact Personnel Activities, ext. 425.

Toastmasters International Salutes Henry Greenberger

Henry Greenberger, Engineering specialist, Electronics Division, has been awarded the Distinguished Toastmaster title by Toastmasters International.

Toastmasters International president Donald W. Paape, in announcing the award of the DTM to Mr. Greenberger, noted that less than 200 individuals have received the organization's highest honor in the nearly 50 years of its existence.

Mr. Greenberger

Mr. Greenberger has been a member of Northrop's Toastmaster Club 212, District I, for over eight years and has held offices as treasurer, educational vice president, president twice, and district governor, District 50.

To receive the DTM, a Toastmaster must have held leadership positions within his club and fulfilled the requirements of holding a district office, participated in community activities, and completed the Toastmasters Communication and Leadership program, as well as other Toastmasters educational programs.

Summer of '53 Recalled by Six

The summer of '53 proved to be memorable for six Electronics Division members who chose Northrop for a career and are now observing their 20 year anniversaries in July.

From the Hawthorne facility, Carrie W. Baptist, Victor Moore, Bruce E. Rapp, Eugene M. Courtier, and Erwin H. Steinmeyer, are the 20 year service awardees with Tommy T. Asahina, Palos Verdes, rounding out the group.

Service awards for 10 years' service went to Rene Amador, G.W. Hauser, J.I. Luckett, H.H. Hyde, L.B. Mebine, V.C. Poole, R.W. Hull, K.J. Wiley, R.C. Thornton, M.R. Obright, J.T. Phillips and R.H. Young. Five-year recipients were L.J. Schoonover, E.F. Mills, S.A. McCann, W.F. Goede, L.J. Overstreet and M.A. Luke.

FERGUSON

(Continued from page 1)

Mr. Ferguson is president of Berkeley Scientific Laboratories, and is on the board of Northrop Dakota, Inc., Polhemus Navigation Sciences, Inc., and a director of Northeastern University's National Council.

DON AVALLON, left center, and Bill McCann, right center, Electronics Division, pose with the honorable Edward L. Morgan, left, assistant secretary of the Treasury for Enforcement Tariff & Trade and Operations, and W. Guy Fox, right, president, Los Angeles Air Cargo Assn. during Air Cargo Day May 21. The day-long program was one of the highlights of World Trade Week designed to achieve peace through a balance of trade.

Don Bacon's Suggestion Brings $337 Cash Award

Suggestion Award winners from the Electronics Division have pocketed cash prizes totaling $630 during the months of May and June, according to Sheryl Lee of Industrial Relations.

Don Bacon, Property Operations coordinator, was top award winner for his suggestion "Pneumatic Flat Pack Lead Clipper" which brought him a check for $337. Don's suggestion called for the use of a pneumatic hand tool for cutting four leads at once in the assembly phases of components rather than the time consuming routine of cutting each lead one at a time with hand clippers.

Other suggestion winners were: Wanda Adams, $122 for code packing sheets, and $10 for repairing switchbanks; Ray Nazaruk, $75 for use of less expensive scopes; Robert Bone, $56 for metal shims on lead bonder; Annette Adam, $20 for paper guide for typewriters; and Marie Stehle, $10 for holding fixture.

DON BACON receives check for $337 from his supervisor, B.D. Spafford.

SEPAS—Covers All Supervision

(Continued from page 1)

interviews on each individual's anniversary date.

The SEPAS consists of three phases: 1) the establishment of mutually - agreed - upon objectives and standards for each incumbent in each position, 2) the analysis and evaluation of actual performance, including estimation of potential for advancement, and designation of eligible replacements where applicable, and 3) the establishment of mutually - agreed - upon individual development plans to realize inherent potential.

Each of the above-listed phases will be accomplished jointly by the appraiser and appraisee during appraisal interviews.

Jud Morris, chief, Personnel Development and Training, and designer of SEPAS, described the new system as being ". . . not really unique . . . just the combination of the best portions of several proven systems used throughout industry."

Mr. Morris also noted that under the new system, delinquent appraisal reports will be kept to a minimum due to the fact that any appraiser not adhering to the procedures outlined will have it reflected on his own appraisal report.

"Once SEPAS has been operating for a full year and is receiving the full support of those involved, I feel the division will be a step closer to fully implementing Management by Objectives," Mr. Morris said.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 31, No. 8 | August 1973

Contest Under Way To Name Omega Navigation System

A contest is under way throughout the California operations of the Electronics Division to name Northrop's new low-cost advanced Omega navigation system.

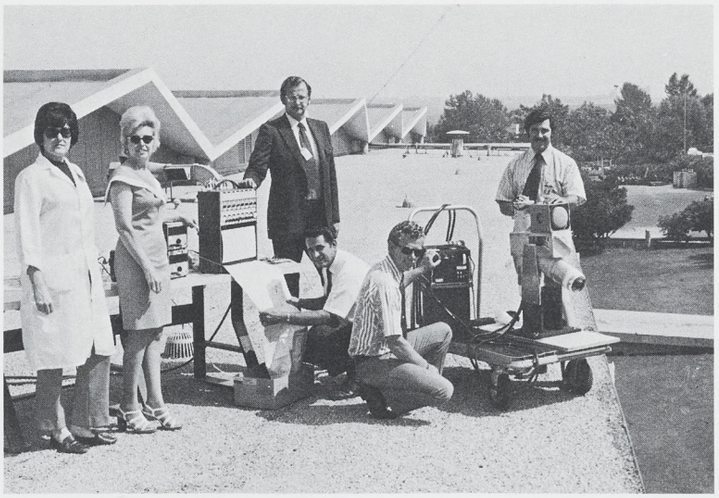
First of its kind within the division, the contest is limited to permanent employees with family members and management-level personnel ineligible. The prize to the winning entrant is $200 in savings bonds. The September issue of the Northrop News will have complete results.

The contest was launched Aug. 6, and will run until 4:45 p.m. on Aug. 31. All entries will be date and time-received stamped so in the event of duplicate names, the earlier entry would be the winner. Only one entry per employee will be accepted.

Operating within a chain of eight transmitting stations propagating very low frequency radio waves, the new system with compact lightweight receiver-computer and restyled control indicator panel, allows a broader range of applications at low cost.

Entry blanks are available on the display boards located in each of the division facilities or through Personnel Activities. Simply fold the entry, staple, and send through distribution.

COMPONENTRY as well as people are captured on film by John Lewis, photographer, as he performs his many duties within the Electronics Division. Photographic operations throughout Northrop's divisions are featured on page 3.



PATH PROJECT team members pose with flight demonstration equipment during recent rooftop tests prior to delivery to the Army. From left to right, Barbara Pendergrass, Alice Carlson, Tom Leighton, project manager, John Overholser, Stan Ecklund, and John Rufino. Not pictured are: John Groves, Gordon Singleton, Les Lauck and Gil Roberge.

Service Awardees Named

The Electronics Division will present awards to five of its members this month for 20 years of service with Northrop. They are. Robert Arrasmith, Alvin Eldridge, John Nikodem, and Richard Gibbs, Hawthorne facility, and Robert Hayos from Palos Verdes.

Observing 10-year anniversaries are, S. D. Parr, G. L. Wycoff, R. W. Nowell, W. F. Tulk, J. W. Koletty, and D. M. Strawn. August recipients of five-year service awards are, T. P. Brady, G. A. Dudman, T. J. Towles, A. T. Arbon, T. M. Izuhara, J. I. Martin, T. L. Dickson, and M. L. Olson. Pearl Gottschall, Dayton, Ohio, and A. R. Brown, and J. M. Schlesinger, Berkeley Scientific Laboratories, are the other five-year service awardees.

Three Graduate

Three members of the Berkeley Scientific Laboratories' Torrance facility have been graduated from the Red Cross Standard First Aid course conducted over a 10-week period by J.J. Rahiya, Safety instructor, Electronics Division. The graduates are Maria V. Lowe, Lloyd W. Barnard, and James G. Ferguson.

Old Fashioned Fun And Free Goodies On Tap for Picnic

Good old fashioned fun is in store for everyone attending the Electronics Division picnic sponsored by the NRC Sunday, Aug. 26, at El Dorado Park, Long Beach.

Soda pop and ice cream will be free to all, as well as games and prizes. Employees and their families are encouraged to bring box lunches to the day-long event. Contact Gail Wise in Personnel Activities at Hawthorne, ext. 425, or Joan Jones at Palos Verdes, ext. 441, for details.

PATH Ready For Army Test

The Tactical Avionics Department, Palos Verdes, has met a major contract commitment on the PATH (Precision Approach and Terminal Hover) project with the on-time completion of flight demonstration equipment for the U.S. Army.

Tom Leighton, project manager, cited the hard work and determination of his project team for the on-time delivery which saw the equipment design, fabrication, checkout, and calibration proceed smoothly on a very tight schedule since the go-ahead at the end of April.

The flight demonstration equipment consists of an electronics unit and a sensor assembly which includes two infra-red tracking heads and a gyro attitude reference system. It will be test flown during a series of helicopter flight tests by the Army at the Naval Air Test Center, Patuxent River, Md., to record and verify guidance signal characteristics.

The PATH system, which will eventually include a Northrop TOP/20 computer and DIGISPLAY, will be used to guide a cargo helicopter in a controlled quick approach to a small ground beacon and to maintain precision hovering for tactical cargo delivery or pickup despite poor visibility conditions such as fog or blowing dust.

Mr. Leighton noted that the

(See PATH, page 8)

RECENT VISITORS to the Electronics Division were members of the Berkeley Scientific Laboratories' nationwide sales force headquartered at BSL, Hayward. The sales force visited BSL's new Business Data Systems facility in Torrance and the Palos Verdes and Hawthorne facilities of the Electronics Division.

Carson Appointed To Management Development Office

H.M. Carson has been appointed Corporate director, Organization and Management Development, it has been announced by J. H. Bruce, vice president, Corporate Industrial Relations.

Mr. Carson comes to Northrop from Continental Airlines, where he was corporate director, Management Development and Employment, since 1970.

Previously he was with the General Electric Company at various locations throughout the United States from 1957 to 1970. He served in many supervisory and management positions, primarily in the electronics, defense and aerospace businesses. His last assignment was as employee relations manager, western region, headquartered in Los Angeles.

He served as a special agent in the U.S. Navy Office of Intelligence from 1952 to 1957.

Mr. Carson received his B.A. degree in pre-law from Rutgers University in 1951 and attended the Rutgers University Law School.

NWASI CONTRACTS

Northrop Worldwide Aircraft Services, Inc., Lawton, Okla., has received two Air Force contracts totalling $14,107,293 for services in support of undergraduate pilot training.

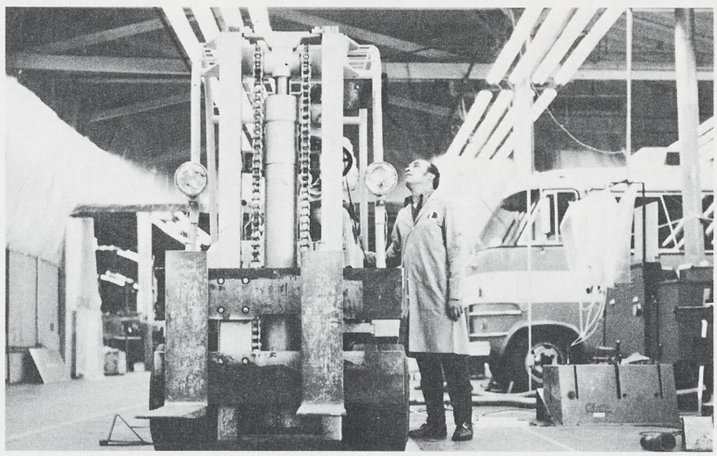
The Air Training Command awarded NWASI a $10,432,460 contract for operation and maintenance services at Vance AFB, Okla., and a $3,674,833 contract for services in support of German and Vietnamese undergraduate pilot training at Sheppard AFB, Tex.

NWASI is a wholly owned subsidiary of Northrop Corporation.

Advertising Club Awards Silver Cup

The creators of the Northrop capabilities booklet entitled, "A Heritage of Creative Technology," have been awarded the Belding silver cup award by the Advertising Club of Los Angeles at its seventh annual awards banquet.

Grey Advertising was awarded the silver cup for its creative achievement in the Northrop booklet by a panel of professional advertisers from the advertising community of Los Angeles. The awards are given in memory of Don Belding who was a prominent advertising man in the Los Angeles community.



OLSON TECHNICIANS check out Electro-Mechanical Division in-plant vehicles for smog control.

Hard Line Drive on Industrial Pollution Is Northrop Policy

From Ping Pong balls to vehicle dynamometers, and from elaborate smog emission testing equipment to "farming," the Electro-Mechanical Division has enlisted all possible means to reduce industrial pollution.

The hard line drive on industrial pollution is based upon a Northrop policy summed up recently by company President Thomas V. Jones, who said: "We are deeply committed to a total program of pollution control, and will continue to energetically search out new ways of doing an even better job."

"Searching out new ways to do an even better job" often means seeking unusual solutions to environmental problems. In one case, Electro-Mechanical Division plant engineers covered the surface of a heat treat tank with floating Ping Pong balls. The closely packed balls served as a surface seal to prevent evaporation of vapors into the air while providing a cover that could be easily pushed back so parts could be placed in the solution.

Another unique program in Anaheim, initiated by the division in cooperation with Olson Laboratories, is testing of in-plant vehicles for exhaust emissions. The tests are done in the same Vehicle Emission Test Center used for smog study programs for California and the Federal Environmental Protection Agency.

In two of its programs for state and federal environmental agencies, Olson used volunteer cars from the Anaheim area in order to obtain a cross section of vehicle types.

This not only assisted an important clean air program, but also aided local pollution reduction. This occurred because the test cars, as part of the program, were tuned and adjusted for minimum emissions.

In still another program to improve the environment, the Anaheim NRC Horticulture Club planted a thousand tree seedlings on Northrop property fronting on the Riverside Freeway. The trees, as they grow, will not only beautify the area, but will also act as a shield for noise pollution from freeway traffic.

This environmental improvement program is one of highest priority in the Electro-Mechanical Division, based on the policy "if you can see it, smell it or feel it, do something about it."

Wilcox to Provide Airport Equipment For Saudi Arabia

World Wide Wilcox, Inc., has been awarded a $4,856,193 contract to expand the air traffic control system and provide navigation aids and communications equipment for Saudi Arabia.

World Wide Wilcox is the international sales organization for Wilcox Electric, Inc., Kansas City, a wholly owned subsidiary of Northrop.

The contract, let by the civil aviation department, covers installation of an instrument landing system at Dhahran Airport, remote control air-ground systems at Medina and Taif, a flight information console at Jeddah, six VHF omni-range radio stations, and four distance measuring equipment systems.

The equipment will be installed by early 1975. World Wide Wilcox, prime contractor on the project, will subcontract about 20 per cent of the work to Page Communications Engineers, Inc.

Six Months Sales Reported; Current Order Backlog Up

Northrop Corporation reported net sales of $287,674,000 for the six months ending June 30, 1973, compared with $267,626,000 in the first six months of 1972.

Six months net earnings totaled $4,081,000 compared with $5,081,000 for the first half of 1972. This was equivalent to $1 per primary share as against $1.13 for the six-months period of 1972. Fully diluted earnings were 89 cents as compared with $1 a year ago.

Northrop's current order backlog totaled $940,855,000, the highest in the company's history. This figure compares with $733,906,000 at June 30, 1972.

Net sales for the three months ended June 30, 1973 were $155,509,000 compared with $154,320,000 for the same period last year, and up from $132,165,000 for the first quarter of 1973.

Net earnings for the second quarter were $2,314,000 compared with $2,728,000 a year earlier, and up from $1,767,000 for the first three months of 1973.

First quarter earnings were equivalent to 58 cents per primary share compared with 61 cents in the second quarter of last year, and 42 cents in the first quarter of 1973. Fully diluted earnings for the second quarter were 50 cents per share against 54 cents a year ago, and 39 cents in the first quarter of 1973.

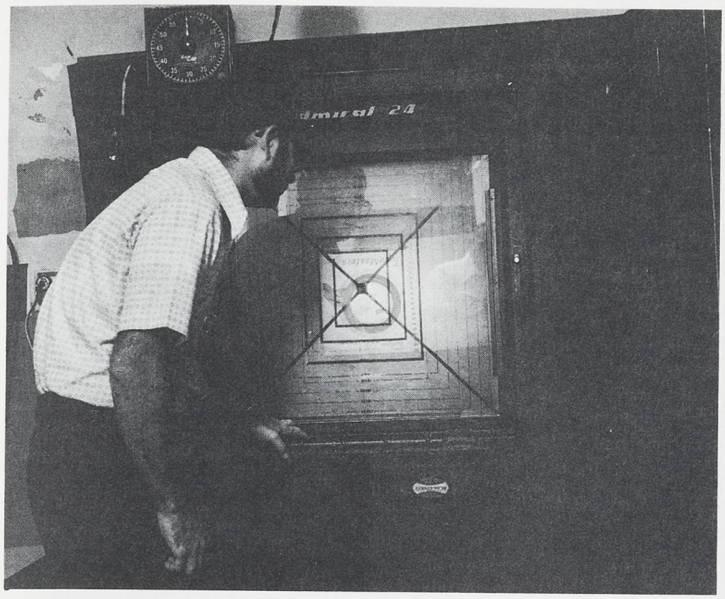
At June 30, the company had 3,747,950 shares outstanding compared with 4,185,791 shares a year earlier.

METRIC CONFERENCE

Dr. Donald A. Hicks, Corporate vice president, Research and Technology, will serve on the advisory committee for the "Going Metric: Meeting the Conversion Challenge" conference and exhibit to be held Sept. 7-8, on the UCLA campus. The conference is designed to aid industry in its plans for making the metric conversion and to speed up the public's understanding and acceptance of the metric system of measuring.

The public is invited free of charge to view exhibits by educational institutions and industrial companies on metrication Saturday, Sept. 8, as well as view continuous metric films and slide presentations in Rolfe Hall on the Westwood campus. Miss Metric will be on hand to conduct free weighings on a metric scale.

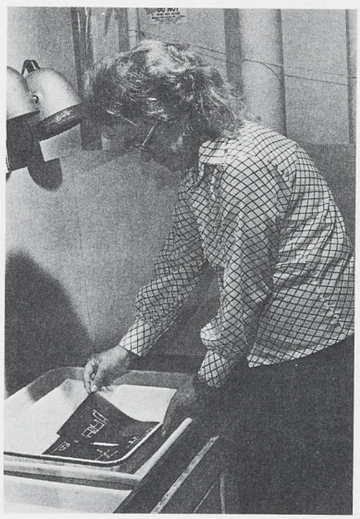
The public is also invited to sit in on a panel dealing with what the homemaker and the public will encounter with U.S. metrication.



CAMERAS come in all sizes. Here Ron Grishaber of the Electro-Mechanical Division, sets up the huge process copy camera to make an engraving for an important marketing proposal. Another way in which photography provides an essential service for the company mission. (Photo by John Branzetti)

LILLIAN PATTON, left, and Spencer Yost, perform two of the processes vital to the photographic operations at the Aircraft Division, Hawthorne. Lillian operates the print enlarger in the darkroom while Spencer processes and dries the prints in the finishing area.

MANY HOURS of work in the darkrooms of the company's many plants are necessary to produce the photographs needed to support Northrop's business activities. Here Naomi Regan of Northrop Architectural Systems, develops a process negative. (Photo by Ted Citizen)



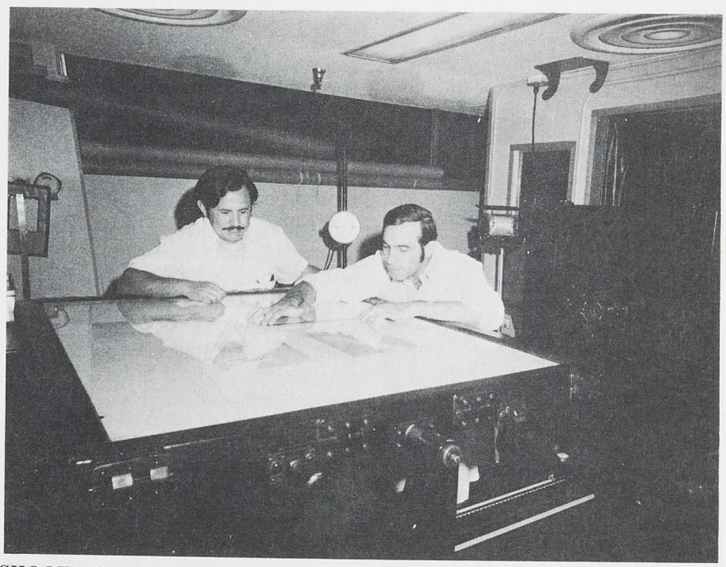
People and Cameras

'One Picture Is Worth A Thousand Words'

The camera has a major place among the important tools that support Northrop's many functions. Photographs and different phases of photography are used for general reports, progress reports, proposals, documentation, templates, microcircuit boards, instrumentation, high speed movie documentation of special tests, Northrop News, and a wide variety of other uses.

In fact, we can almost paraphrase the statement, "One picture is worth a thousand words." At Northrop, pictures have a thousand uses.

MOTION PICTURE Photographer Tom Smalley of the Ventura Division adjusts equipment during the videotaping of a training session. Technical knowledge of the many facets of filming is just part of Mr. Smalley's background in motion picture photography.



SHOOTING mil-spec line negatives requires the patience and skill of professionals and Andy Barajas, left, and Frank Ventura, photo assistants, are equal to the task at the Electronics Division. Andy and Frank are in the Photographic Laboratory at the Hawthorne facility.

Graphite Composites To Reduce Amputee's Burden Substantially

About two years ago Phil Shapiro, manager, Aircraft Division Cost Analysis and Proposal Support, became interested in advanced composites.

Mr. Shapiro has a friend who wears 16 pounds of leg braces. What a burden to drag about wherever you go. Could the weight be reduced and functional efficiency increased? Would advanced composites, which are reducing the weight of aircraft structures by 30 per cent or more, be able to help reduce the burden on an amputee?

Mr. Shapiro discussed the possibilities with Dr. Ernie Mikus, manager, Materials Research Department, who immediately formulated a small exploratory program under the direction of Advanced Composites Specialist Bernie Bowen.

A marketing campaign began led by Mr. Shapiro and Hal Maninger, manager, Research and Technology Marketing, supported by the Materials Research Department.

The Veteran's Administration in New York City, showed immediate interest, visited Northrop to observe our work in advanced composites, and requested a proposal.

Mr. Bowen and Wick Wochos, senior engineer, obtained a leg pylon design and modified it to incorporate graphite epoxy composites, and submitted it to the Administration. Northrop received a contract to produce six pylons and work started in December 1972.

The fabrication of the first graphite/epoxy composite pylons was completed last month by Jim Nemo of the Materials Research Department. This design weighs about 30 per cent less than the all-aluminum design.

The pylon consists of a knee hinge and the portion of the leg immediately below the knee. Motion in the lower leg and foot is controlled by two hydraulic cylinders inside the structure.

Subsequent to the first unit produced, two modified design alterations were made resulting in an all-composite structure with a 50 per cent weight reduction over the original aluminum part.

Five of the units are presently in laboratory evaluation programs, and the sixth unit is being fitted to a patient by the Sawtelle Hospital unit for field testing.

This work has resulted in follow-on contract effort to reduce the cost of manufacture to a price of approximately $100 per unit and to fabricate about a dozen units for more extensive field testing.

This is an example of the many uses of aerospace technology.

JIM NEMO demonstrates the size and location of the graphite limb that might replace the knee joint and upper portion of the lower leg on an amputee to Pat Honeycutt, Materials Research Department, Aircraft Division.

Turkish Air Force Pilots Win 'Best Hit 73' Meet

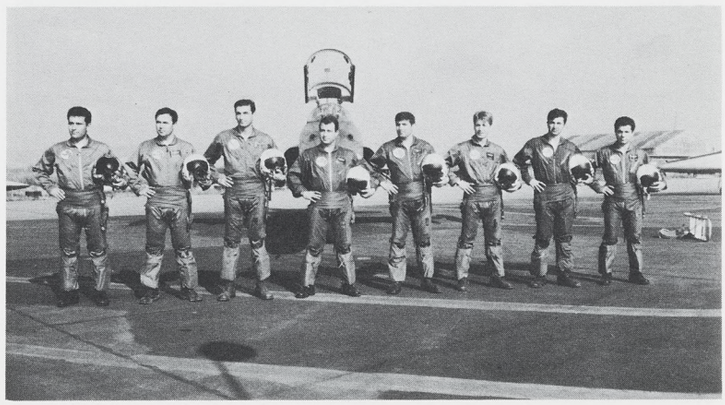
Turkish Air Force pilots, flying Northrop F-5A tactical fighters, swept team honors in NATO's "Best Hit 73" Weapons Meet held at Istrana Air Base in Northern Italy.

The two-week competition, concluded July 26, involved Northrop F-5A Freedom Fighters as well as F-4 Phantoms, F-104G Starfighters, and G-91s flown by Turkish, United States, Greek, and Italian pilots. "Best Hit 73" is the annual weapons competition meet for NATO Air Forces of Southern European countries.

The four-man Turkish Air Force team, headed by Major Zeki Kiyak, scored consistently high in the five categories of competition — air-to-ground rocketry, strafing, low level bomb delivery, dive bombing, and navigation. Despite bad weather which hindered the two-week competition, 144 missions were flown by the competing teams. The Turkish team win this year in "Best Hit 73" follows last year's victory by Greece in "Best Hit 72," using Northrop F-5s.

Earlier this year, a Royal Norwegian Air Force team flying F-5s swept both team and individual honors in NATO's "Bulls Eye 73" competition held in Schleswig, Germany, in March. In that meet the Norwegians won out over nine other teams flying Mirages, G-91s, F-100s, Draakens, and F-104Gs. In addition to team honors, Norwegian pilots flying F-5s took first, second and fourth places in the individual standings to complete a strong showing in "Bulls Eye 73."

The most recent F-5 victory by the Turkish Air Force adds to an already impressive record in competitive meets for the Northrop fighter. In 18 weapon competition meets, F-5 teams have placed first 16 times and second in the other two. This record has been compiled against such aircraft as the Mirage, A-7, F-4, F-100, F-104, and G-91.



TURKISH AIR FORCE team components competing in AIRSOUTH Tactical Weapons Meet 'Best Hit 73' among NATO Southern Region Air Forces are, from left, Capt. Hami Yuksel; First Lieutenants Sabri Aydogan, Omer Sengun, Canan Kose, Selahattin Sener, Salih Cetinkaya, Turgut Esiz and Ahmet Ergonen.

Major Dunne Is First American Pilot To Accumulate 2000 Hours in F-5S

Major Gil Dunne of the USAF, recently became the first American pilot to accumulate 2000 hours in the F-5 Freedom Fighter. He accomplished the milestone while serving as USAF exchange officer with the 434 Tactical Fighter and Operational Training Squadron at Cold Lake, Alberta, Canada.

Major Dunne received his wings in 1962 and after a tour as a flying instructor was assigned to South Vietnam with the Skoshi Tigers. While there, he also served as Wing Operations staff officer.

MAJOR GIL DUNNE

Upon his return to the United States, Major Dunne was posted to the 425 TFTS at Williams AFB, Ariz., where he served as an operational flying instructor until his reassignment to Canada.

NORTHROP WORLDWIDE SERVICES COMMENDED

The Sheppard AFB Support Services Division of Northrop Worldwide Services, Inc., has been commended for making a USAF wing commander's task more rewarding.

In a letter to NWASI Sheppard AFB Division Manager Ralph E. Walker, former USAF 80th Flying Training Wing Commander Colonel Robert G. Liotta, expressed his feelings:

"In my entire career I never met a maintenance organization with such a super abundance of outstanding attributes. The pride, the efficiency, the enthusiasm, and the over-all superiority begins at the top with you and Glen Hickey, NWASI director of Maintenance, and spreads out to every man there . . ." The constant fear that a wing commander has for his young pilots was greatly minimized."

Colonel Liotta is currently the base commander at Webb AFB, Tex.

FUN FOR THE WHOLE family—the Northrop family, that is—will be in store for all employees of all divisions the weekends of Oct. 20-21 and 27-28, when Lion Country Safari will welcome Northrop at special discount prices at the Orange County wildlife preserve. Representing the five major operations of Northrop in Southern California are, left to right: Carol Martin, Electronics; Gayle Hayes, Aircraft; Vicki Clarke, Northrop Architectural Systems; Diane Jacobs, Ventura; and Teri Compise, Electro-Mechanical.

ED REILLY, Industrial Motion Picture specialist, Aircraft Division, displays a plaque given him commemorating the spectacular photo of the F-5E Tiger II he took in flight which was used on the cover of Aviation Week & Space Technology, May 28, 1973 edition. Ed was flying in the rear seat of a T-38 trainer when he snapped the photo.

NORTHROP AIRPORT Development Corporation personnel held their first Employee Art Exhibit last month which included oil paintings, needlepoint, photography, Christmas tree ornaments, macrame, sketches, and even a paint-by-number entry from one of their senior staff members. In the photo are, from left, Carol Carey, Personnel assistant, who organized the exhibit; David Sullivan, vice president, Marketing Services; and Janis Meakin, administrative secretary, Airport Systems Department. The oil painting Mr. Sullivan is holding entitled 'Sweet Tooth' submitted by Mrs. Meakin was originally painted to hang in a dentist's office.

Scanning Old Publication Brings Back Memories

It's enough to bring tears to the eyes of those who remember how it was in the old days!

At least that is how L.J. "Doug" Sessions, Ventura Division, feels when he looks over his copy of "Plane Talk." Doug's "Plane Talk," an early forerunner of "Northrop News," was published by The Northrop Employees Association in January 1936. T.C. Tinkham was advertising manager. Yes, "Plane Talk" carried the ads of local merchants.

Reading those ads in the light of today's prices makes one wish for those "good old days." For instance; The Lake Cafe was featuring dining and dancing including steak and chicken dinners complete with beer or wine for $1! And a haircut at Joe Conrad's Barber Shop was 25 cents!

Better still, one could buy a new Ford for just $25 a month from George M. Sutton and a 1929 Essex four-door sedan was going for $165!

News of Employees

"Plane Talk" carried news from throughout the still-new Northrop Corporation with columns contributed by employees including a gossipy one devoted to the ladies by Miss Hilda Ives. Weddings, engagements, parties and other tidbits of personal information appeared regularly.

Doug's edition features a photo of the Northrop monoplane that carried explorer Lincoln Ellsworth across the Antarctic.

During the flight, the plane ran out of fuel and Ellsworth and his pilot were lost until found safe by a search party. Despite bad weather and several such forced landings, the plane functioned perfectly, according to "Plane Talk."

Doug obtained his copy of "Plane Talk" from Earl Morgan. It was part of Doug's collection of early Northrop publications which he accumulated during his almost 30 years with the corporation. Recently, in moving, he had to get rid of many of them because of lack of storage space.

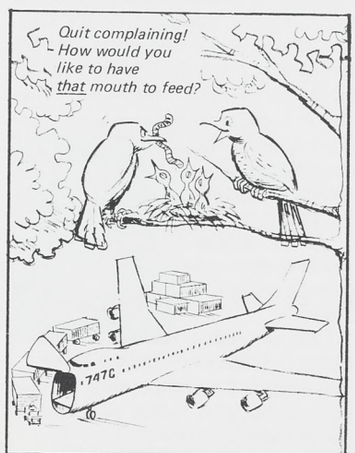
Started in 1944

Doug, who is manager of Reproduction and Printing, at the Ventura Division, started with Northrop in 1944 writing service manuals. He continued in this area for what is now the Aircraft Division until 1956 when he transferred to Radioplane where he continued to write handbooks and brochures later becoming involved with reproduction and printing.

He remembers the two weeks he spent in Jack Northrop's office writing a brochure on the Flying Wing airplane which created so much interest at the time.

"I asked the questions and Mr. Northrop told me the answers and I used the information in the brochure," Doug remarked. It was interesting and I enjoyed every minute of it.

Looking over his 1936 "Plane Talk" he recalls many of the people and the places mentioned. "Just think of it, a four-room stucco house with two lots for just $1200!", said Doug.



**IS IT NEWS?
CALL EXT. 4273
HAWTHORNE**

REMEMBER WHEN the cost of a dinner plus dancing was just $1? Mrs. Letty Archbold and L.J. "Doug" Sessions of the Ventura Division look over a 1936 edition of 'Plane Talk', an early forerunner of 'Northrop News' that Mr. Sessions has as a reminder of the early days of the corporation.

Roar of Engines Is Sweet Music to Her

The sweetest music to Evelyn Pratt is the roar of engines, the clang of wrenches on bolts and the screech of rubber on a racetrack.

And her enthusiasm, plus hours with wrenches in her hand, helped make a sprint racing car she owns with her husband, Bill, the number one car in the California Racing Association last year.

Mrs. Pratt, who is a fabricator with Northrop Architectural Systems, has always loved speed. But it was not until she saw her brother drive in a jalopy race 15 years ago that she got into racing herself.

She bought a jalopy and started racing in the women's division. Under the rules, she had to run in the back of the pack for three races in order to learn how to drive. After that, she was never at the back any more. She earned three trophies before giving up the wheel for a mechanic's wrench.

Three Racing Cars

Today the Pratts own three racing cars which are driven for them by professional drivers. In addition to the number one sprint car, they also own a midget and a super modified, which consistently runs in the top 20 on oval tracks in California and Arizona.

Their number one position with the California Racing Association last year brought them an invitation to race with the U.S. Auto Club in the midwest this year, and Mr. Pratt has the car back there now.

Mrs. Pratt has a complete speed shop built in her garage, and when she leaves Northrop each day she goes home to her wrenches and grinders. She had no formal training as a mechanic. "You just learn because you have to," she said.

"Also," she added, "you learn by keeping your eyes open. If another car beats us on the track, I look and see why."

One Saturday their sprint car blew an engine. Mrs. Pratt, alone, worked all night, tore the engine down completely, reassembled it and had it back on the track the next day. "And furthermore," she said, "it set the seventh fastest time in the track's history."

After successfully proving that she could drive and rebuild cars, Mrs. Pratt is now looking forward to joining the pit crew. Previously, women were barred from the pits during races, but recent women's liberation legislation has forced track owners to change their restrictions.

ONE OF THE PRATTS three racing cars as it rounds a curve.

EVELYN PRATT sits in the stadium at Gardena to watch her cars win races.

Theresa Mirko Has Great Sales Ability

Theresa Mirko, daughter of Dick Mirko, Maintainability group, Aircraft Division, was named top salesgirl for the Orange County Council of Camp Fire Girls in their annual product sale.

Theresa sold 840 cans of Almond Roca candy which was an increase of 375 cans over last year's high, and, according to the candy manufacturers, Brown & Haley, was one of the highest totals attained in the United States.

Theresa Mirko

For her sales ability, Theresa was awarded a campership to resident camp plus a day at Knott's Berry Farm.

Theresa has been a member of the Camp Fire Girls for three years and will be a fifth grade student at St. Joseph's School in Placentia during the fall. Besides being active in Camp Fire, she is active in advanced gymnastics and piano.

Comment . . .

The Northrop News will publish in each issue a selection of letters which, in the sole judgment of the editors, are of the broadest general interest. Remember that the best sources for information about Northrop practices are your "Working With Northrop" booklet or your immediate supervisor. Letters should be addressed to "Comment, Northrop News, 172/40."

* * *

"Are the dividends from the Northrop stock in the Savings Plan reinvested to buy additional Northrop stock for the account, or are the dividends retained by the company?"

A. C. Weishaar
Electro-Mechanical Division

Company contributions to the Profit Funds of the Northrop Salaried and Hourly Savings Plans are used by the Trustee (Manufacturers Hanover Trust Co.) to purchase Northrop stock. Dividends on this stock are paid to the trustee and are used by him to purchase additional Northrop stock. — D. E. Lutz, Corporate director, Savings Plans.

Mexican Tour Meeting Set

If you haven't already made plans for your Christmas holidays, why not spend them with the NRC Travel Club in Mexico.

The club has scheduled a "Christmas in Mexico" kickoff meeting for Tuesday, Aug. 21, 7:30 p.m. at the NRC Clubhouse, Hawthorne. A guest speaker and tour representative will be present to show a film of the tour and answer any questions.

Price of the tour is $445. It includes air fare, hotels, lunch and dinner throughout, sightseeing of Mexico City, Taxco and Acapulco with a New Year's Eve party at Ciro's Nightclub in Acapulco.

The Travel Club still has reservations open for the charter flight to London which departs Aug. 31 and returns Sept. 21 for a cost of $239.

Contact Jeannie Andrecht, Electronics Hawthorne, ext. 542, or Dave Carney, Aircraft Division, ext. 2486.

DAVE JOHNSON

GEM AND MINERAL CLUB TO HOST SHOW

Dave Johnson, husband of Gladys Johnson, Aircraft Division Gem and Mineral Club, nights, will present his latest show, "Across British Columbia on a Horse," Wednesday, Sept. 12, at 7:30 p.m. in the NRC Clubhouse, Hawthorne.

Hosted by the Gem and Mineral Club, Dave's exhilarating program will highlight his summer-long travels through Northern Canada to rockhound, fish, camp and film the wilderness as he sees it. All employees are invited.

Seamstress of the Year Honors

Carinne Gwinn, daughter of Clinton Gwinn, senior engineer, Electronics Division, was named Seamstress of the Year by her Freshman Clothing I-II class at Mira Costa High School, Manhattan Beach.

Carinne was awarded the honor for a full length formal gown she designed and modeled at the "Here Comes the Sun" fashion show sponsored by the Mira Costa homemaking department and Girl's League Association. Sixty-seven contestants competed with Carinne and were judged on appearance, how clothing looked on model, and quality of workmanship.

A four-member panel conducted the judging at the fashion show with the winner having her name engraved on a permanent plaque in the school's trophy room.

MODELING the gown she designed is Carinne Gwinn with Steve Taylor, son of Ed Taylor, Aircraft Division and a senior at Mira Costa, as her escort.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Mazda, 1971, $1600. 213-673-3983.

Chevrolet, 1973 ¾-ton Camper Special, auto., p/b, p/s, 8' Roadrunner cabover camper, sleeps 6, $5000. 714-526-2962.

Ford, 1970 van, 1 ton, 5-pass., long whl. base, r/h, $2000. 213-927-8972.

Datsun, 240Z, $3950. 213-542-8235.

Cadillac, 1968 Fleetwood Brougham, recent tune-up, many extras, $1995. 213-547-3746.

Motorcycle, 1972, 650 custom Yamaha, $1200. 213-320-8516.

Ford, 1966 Fairlane 500, 2-dr. h/top, 390, 2 bbl., 4-spd., $650. 213-644-3075.

Motorcycle, 1972 Yamaha 250DT2mx, slightly used, $750. 213-377-4481.

Plymouth, 1969 Roadrunner, 383 magnum eng., 4-spd. trans., Shelby mag whls., $1295. 714-737-2742.

Volkswagen, 1964, $399. 714-962-8127.

Toyota, 1970 Corolla, 30,000 mi., radio, $990. 213-545-4182.

Motorcycle, BSA 441 Victor, dirt or street, many extras, $300. 714-539-5812.

Station Wagon, 1966 Mercury Colony Park, full power, 3 seats, $900. 213-633-5496.

Motorcycle, Honda 55, only 1200 mi., $75. 213-360-0386.

Shelby, 1967, GT 500, stick, 32,000 mi., extras, $2100. 213-324-1908.

Dodge, 1970 Polara, 4-dr., h/top, p/s, p/b, a/c, approx. 48,000 mi., $1650. 213-325-6546.

Pickup, 1951, Ford, ¾-ton, Camper Special, aux. tanks, 4-spd. trans., a/c, 8' cabover camper, extras, $4395. 714-524-5756.

Olds, 1968 Cutlass, p/s, d/brakes, a/c, $1195. 805-495-9736.

Volkswagen, 1970, walnut panel, $1400. 213-351-8719, 213-351-9744.

Pontiac, 1961, 4-dr., 1-owner, $85. 213-375-1475.

Chevrolet, 1965 Impala Super Sport, a/c, radio, auto. trans., 283 cu. in., $550. 213-675-6462.

Pontiac, 1973 Gran Prix, full power, 4,700 mi., min. bid, $4900, bids close Friday, Aug. 17, Credit Union, Hawthorne ext. 1117.

Mercury, 1966 Col. Park wagon, air, AM-FM, full power, $950. 213-672-2407.

Camaro, 1970, 350 eng., a/c, r/h, p/s, p/b, 23,000 mi., $2600. 213-375-7978.

Chevrolet, 1971 Kingswood Est. sta. wagon, air, p/b, p/s, 6 pass., $3000. 213-377-7763.

Jaguar XJ-6, 1972, FM stereo/tape, 12,000 mi., 1 owner, $8195. 805-487-9987.

Ford, 1972, Super Van, carpet, paneled, $3200. 213-644-0935.

Miscellaneous For Sale

Lamp Table, sq., pecan wood w/cane, Medit. style, $90. 213-326-0124.

Fiberglass, industrial-type, used, light green, 10' & 11'x36", $1 sheet. 213-675-2329.

Guitar, 12-string acoustical & electrical, $90. 213-530-7939.

Studio Couch, 2 bolsters, maroon vinyl, $50. 213-644-7088.

Lathe, Craftsman, 3 & 4 jaw chucks for I.D. or O.D., many extras, $130. 213-676-5101.

Aquarium, Pemco, 26-gal., gravel filter, fluor. hood, stand, $20. 213-374-6445.

Dining Room Table, mahogany, $10. 213-324-7059.

Rug, all-wool revers., 13x16' w/pad, brn. salt & pepper color, $50. 213-530-5651.

Stove, G.E. elec., $40. 213-883-2258.

Sailboat, 8' guppy, $125. 805-483-5644.

Vacation Trailer, 16', sleeps 5, icebox, stove, oven, $500. 213-375-5234.

Stereo, maple console FM-AM radio, record changer, $35. 213-370-9037.

Boat, 1965 Glasspar, 16' Merc., 65 h.p., $1195. 213-635-3127.

Pups, collie, AKC, avail. Aug. 25, $100 & up. 213-865-6887.

Air Conditioner, Admiral Princess, 6,000 b.t.u.h., never used, fits 22¾" to 40" window, $150. 213-834-1378.

Bicycle, Schwinn Collegiate Tourist, 5-spd., men's, $60. 213-722-6213.

Miscellaneous For Sale

Pups, AKC, Samoyed, $100. 213-865-9253.

Refrigerator, General Electric, white, 16 cu. ft., $45. 213-371-3310.

Mini Bike, 3 h.p. Briggs & Stratton eng., $70. 213-542-8954.

Wig, light, $5. 213-392-2396.

Dinette Set, oval table, 6 chairs, $68. 213-370-8001.

Lamps, pr., bedroom-type, hand carved, $15. 213-756-2346.

Bicycle, Huffy, 10-spd., ladies, $60. 213-388-4677.

Pups, Brittany spaniels, 8 wks. old, AKC, $75. 213-371-8110.

Preamplifier, Marantz Mod. 7 stereo, tube-type, $50. 213-530-4207.

Calculator, HP-35, Hewlett-Packard, pocket-size, 1 yr. warranty, $270. 213-389-4801.

Travel Trailer, 1972 Shasta Compact, 13', sleeps 5, hookups, $1095. 213-679-6982.

Camping Trailer, 1962 Kreuger Travel-Aire Viking, weatherproof 8'x10' alum. cabin, sleeps 3, many extras, $200. 213-861-7035.

Coffee Table, 40" dia., maple, $10. 213-376-4831.

Refrigerator, Coldspot, 9 cu. ft., white, $20. 213-641-6362.

Twin Beds, with metal frames, $40. 213-423-1363.

Range, Kenmore elec., $50. 213-378-3017.

Mobile Home, 20'x60' Custom De Lux, $15,000. 213-534-1934.

Boat, Hobie Cat 14', w/trailer, $825. 213-372-7126.

Tent, 10'x13' w/floor, complete, $75. 805-495-7550.

Slide Projector, 3 carousel trays, 3 regular trays, remote control, $50. 213-674-1400.

Bicycle, 26'' ladies' English racer, 3-spd., hand brakes, $50. 213-542-2513.

Freezer, Carrier, 20 cu. ft. compartment, upright, $100. 213-378-9660.

Steamer Chest, $25. 213-830-8074.

Bicycle, 10-spd., men's std. size, Italian make, $60. 213-375-4747.

Aqua Lung, reg., DA 2-stage, 2 weight belts 40# lead & diving knife, $50. 213-675-2005.

Organ, Hammond B-3, Leslie 122 spkrs., mahogany, $2900. 213-372-4970.

Sailboat, Coronado-27, spinnaker, lapper, main sail, 2 motors, deluxe cabin, extras, $8500. 213-373-4298.

Television, GE portable b&w, earphone & stand, $30. 213-541-1913.

Seats, for Ford Econoline van, dvr. & pass., $25. 213-941-1865.

Boa Constrictor, Columbian, w/cage, over 5' long, $90. 213-377-6658.

Typewriter, Underwood, w/stand, $20. 213-834-7716.

Bar Stools, 3, solid walnut, high back, custom made, $75. 213-821-9110.

Stove, apt. size, white, $25. 213-973-2710.

Bed, roll-a-way, ¾-size, $30. 213-675-7740.

Exercycle Exerciser, $400. 213-862-3310.

Bar-b-que, Big-Boy, 18" gas-fired w/lge. propane tank, $25. 213-676-0400.

Dryer, apt. size, Maytag & washer, Frigette, copper, 1 yr. old, $100. 213-675-3889.

Aquarium, 26-gal., stand, pump, filters, access., $55. 213-638-6754.

Aquarium, 40-gal., many extras, tropical fish incl., $65. 213-430-8378.

Television, 23" color, RCA, $125. 213-989-1882.

Table Lamps, 2 walnut & brass, $15 ea. 213-375-9397.

Bicycle, girl's, 24" Phillips, coaster brake, $20. 213-374-8608.

Wanted to Buy

Typewriter, portable, elec., any kind, good cond. 213-371-4341.

Vacu-Form Machine for model makers by Mattell, pay up to $15 if in good condition. 213-329-5792.

Lathe, metal. 213-831-5304.

Pool Table, slate top, good cond. 213-860-9451.

Trailer Hitch, Easy Lift or comparable brand. 213-676-9518.

For Trade

Bicycle, boy's 10-spd., trade for girl's 10-spd. or 5-spd. 213-430-1952.

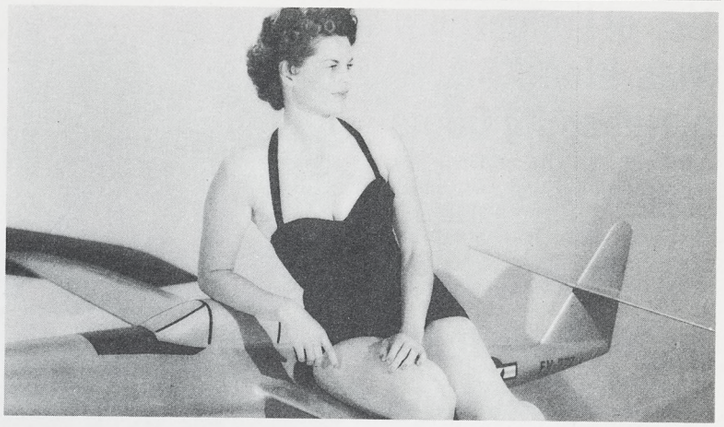
Range, blt.-in Thermador elec. w/deep well, trade for guns. 213-322-5136.

For Sale or Trade

Motorcycle, 1970 Kawasaki Big Horn Enduro, completely stock, $475 or trade for Jeep or 4-w.d. vehicle. 213-329-4090.

Found

Pocket Knife in parking lot between Plant One & cafeteria, contact Don Bodewig, Aircraft ext. 4004.



THE PAST AND present in Northrop's family of aircraft and personnel are graphically displayed by Eva Hough, lower right, and daughter Judy Hosmer, both Purchasing clerks in Propulsion Fuel and Pneumatics Equipment Procurement, Mariposa facility. Eva posed for her picture, above, with an F-89 model in 1955, while Judy, lower left, poses with the F-5E Tiger II. Eva is in her 22nd year with Northrop, Judy is in her second. The latest advancements in the state of the art of bathing suits are also displayed.

HEARST CASTLE TOUR SCHEDULED

The Travel Club has designated San Simeon Weekend for Oct. 6 and 7 to Hearst Castle.

Departure will be from the Aircraft Division cafeteria, Saturday, 9 a.m. via air conditioned Greyhound Lines. The tour will stop for lunch at the famous Andersen's Split Pea Soup Restaurant at Buellton, a two-hour stopover in Solvang and spend Saturday night at the Golden Tee Resort Lodge in Morro Bay.

Reservations for the castle are limited to a choice of the Lower or Upper Floor packages for $24.50.

Personals

We wish to thank all the friends & co-workers for the cards & flowers on the passing of our beloved husband & father. MRS. WARREN E. ASHENFELDER & FAMILY.

Would like to join flight pool from Orange County Airport to Hawthorne, 7 a.m.-3:43 p.m. 714-586-2344.

Ride wanted, or will alternate w/cars from El Toro, 7 a.m.-3:42 p.m. 714-830-2032.

I wish to thank everyone for their concern & thoughtfulness during my son Albert's recent illness. A.R. RODRIGUEZ.

Lloyd Adams & family wish to thank all our friends & co-workers for the flowers, cards & kind expressions of sympathy on the passing of our son & brother Terry.

Many thanks to my friends at Northrop for the retirement send-off & gifts. Your thoughtfulness is greatly appreciated. MARY HAUETER.

Ride wanted, 7:30 a.m.-4:12 p.m., Del Amo & Paramount Blvd., Lakewood, Aircraft ext. 1791, 213-423-2901.

Personals

My sincere thanks & appreciation to all my friends & co-workers at Northrop for the flowers & cards during my recent illness. NANCY T. EASTERLY.

Ride wanted, 8 a.m.-4:42 p.m., Crescent & Knott Aves., Buena Park, Aircraft ext. 4241, 714-995-3767.

Ride wanted or share ride, 8 a.m.-4:42 p.m., vicinity of Imperial Hwy. & Santa Gertrudes or Imperial Hwy. & La Mirada Blvd., Aircraft ext. 1904, 213-943-5602.

Ride wanted, 7:24 a.m.-4:06 p.m., from Hollywood to Mariposa, Mariposa ext. 6559, 213-461-7118.

I wish to thank each & every one for my retirement party & the many gifts. ARTHUR JOHNS.

Thanks to all my friends at Northrop for the retirement party & gifts. BOB TURK.

The last 24 years working in Maintenance I met & made a lot of friends & I want to thank each & every one of you for the lovely gifts & retirement party. GEORGE LOVAS.

NORTHROP NEWS

Vol. 31 **No. 8**

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Editor—Ventura Division ..... **Park Irvine**
Editor—Aircraft, Electronics Divisions ..... **Tom Quintana**
Editor—Precision Products Department ..... **Peter Goodall**
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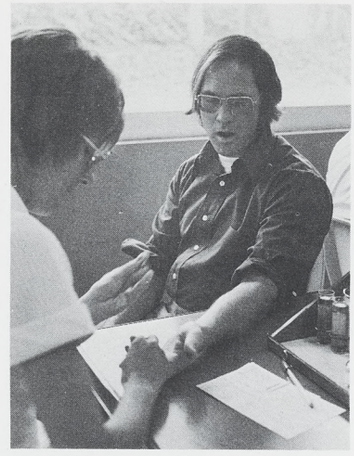
Use of Lunchroom Aids Blood Drive In Reaching Quota

Thanks to the addition of a lunchroom/meeting place within the facility, members of the Electronics Division, Hawthorne, completed one of the most successful blood drives to date, according to Arnah Pakes, Medical. The June Blood Drive brought in 100 pints of blood from division personnel, 10 more than forecasted.

The next blood drive for the Hawthorne facility will be Tuesday, Sept. 25, from 9 a.m. to 1:30 p.m. in the lunchroom which adjoins the patio area.



"SEE, that didn't hurt, did it?" Terry Dickson, Photolab assistant, may not agree wholeheartedly with the Red Cross volunteer but he does agree that every division member should keep his appointment for donating blood.

Rats Drop Three B's; Standings Deadlocked

A tenth-inning single by Ray Latchford scored Lenny Kaufold giving the Rats a 12-11 win over the Three B's. The loss dropped the Three B's into a tie for first place in the second-round standings with the Bummers. The winner of the second round will face the Rogues, winners of the first round, in a best of three game series for the Northrop pennant. Trailing the Three B's and the Bummers are the Rats, Rogues, Road Runners, Battalion, Broncos, and Spoilers. Playoffs will begin the week of Aug. 27.

PATH

(Continued from page 1)

PATH concept had been under serious study at Northrop in cooperation with the Army prior to this funded contract. The next phase will be the development of an operating brassboard of the complete PATH system for test prior to production design.

**IS IT NEWS?
CALL EXT. 4273
HAWTHORNE**

George Scott to Present Paper at AIAA Meeting

George W. Scott, research engineer, Tactical Avionics, Palos Verdes, will present a paper he co-authored entitled, "Digital Information Management System of Navigational and Flight Data for Post-1975 Fighter Aircraft," at the American Institute of Aeronautics and Astronautics Navigation and Guidance symposium Aug. 20-22 in Key Biscayne, Fla.

The purpose of Mr. Scott's paper is to emphasize the pilot-airplane relationship in post-1975 fighter aircraft employing interdiction or reconnaissance tactics. By integrating and simplifying navigational information into an effective display system, the pilot's decision-making capability would be exploited to the maximum while his routine functions would be minimized. The paper discusses the conceptual techniques and functional designs needed to implement this information management system.

Co-author of the paper is Derryl A. Williams, USAF Avionics Laboratory, Wright Patterson AFB, Ohio.

An associate fellow of the AIAA, Mr. Scott was just recently elected chairman for all national technical conferences by his chapter in Los Angeles. Prior to joining Northrop, Mr. Scott served in the Air Force for 20 years in Research and Development involved in design, development, and director management for both military and commercial aircraft systems, tactical weapons systems, and space and missile systems. In recent years, he was the director of Combat Systems and developed and designed the "Smart Bomb," using E/O and laser guidance systems.

Tennis Players Begin Tourneys

The singles competition has been completed in the Electronics Division Tennis Club and Hollis Smith is the men's division winner and Agnes Jordan is the ladies' champion. Hollis downed Sam Murakami for the top spot with Bill Lewis and Jerry Haas the runners-up. Agnes defeated Jo-Ann Leon-Guerrero for the women's title.

Signups are now being taken for the challenge-ladder competition to be held in September. Contact Maxine Lewis, ext. 652, or Gail Wise, ext. 425, Personnel Activities, for details.

MANAGEMENT CLUB

Marian Ash, editor-publisher of Skirting the Capitol, a legislative newsletter for women, will be the guest speaker at the Electronics Division Management Club meeting tonight at Lococo's in Manhattan Beach. Social hour will begin at 5:30 p.m.

"YOU CAN WIN $200!" exclaimed Don Avallon, in announcing the division-wide contest to name the new low-cost Omega navigation system. Pickup your entry blank soon. See story, page 1.

ANNE DALEY, Test Rework Department, Electronics Division, Hawthorne, is typical of the hardworking personnel working second shift within the division. Anne is depicted reworking the wiring of a component.

Winter Bowling Will Begin Soon; Signups Urged in All Divisions

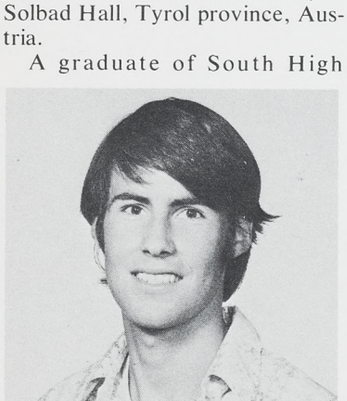
Winter Bowling Leagues will begin play in early September so interested personnel are urged to sign up early and join the league of their choice for team, couple or individual play. For details and entry forms, contact your Personnel Activities office or the commissioner or secretary in your division. A league will be formed at Carter Bowl in Orange County for those living in that area and unable to participate in local leagues.

Don Ayers Will Live Amidst Tyrolean Alps

A year of studies in the scenic Tyrolean Alps, Austria, is in store for Don Ayers, 18-year-old son of Bunky Ayers, Electronics Division, Hawthorne.

Don has been accepted as a foreign exchange student in the American Field Service and will join the Dr. Erwin Sailer family in Solbad Hall, Tyrol province, Austria.

A graduate of South High School, Torrance, Don is no stranger to traveling as he has had extensive travels in his nine years of Scouting. In 1971, he attended the World Scouting Jamboree at Asagiri Heights, Japan, as well as previous Scouting jamborees in neighboring states. Don was elevated to the rank of Eagle Scout in August 1972.



DON AYERS

While living with the Sailer family, Don will attend Solbad Hall Secondary School which is the equivalent to high school, and will be kept occupied by the Sailer's three sons, Michael 17, and Christoph and Martin, 15.

Don's athletic background in track and swimming will come in handy as the Sailers are a sports-minded family that enjoys sailing on the Adriatic Sea as well as watching son Michael on the soccer field where he is an accomplished player on his school team.

Don plans to continue his education at UCLA upon his return and work towards a degree in biology or anatomy in the medical field.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 31, No. 9 | September 1973

Division to Design Memory Package For AF Computer

The Strategic Missile and Space Systems Department, Palos Verdes, has been awarded a research and development contract by the Air Force Materials Laboratory to establish and demonstrate new manufacturing methods and techniques applicable to production of a micro-packaged plated wire memory to be integrated in an advanced nuclear hardened reentry vehicle computer.

First Phase

The first phase of the contract funded for $616,000 requires system trade-offs, design, and layout of the memory. In addition, the contract includes two options: the first for fabrication and acceptance testing of two units and the second for environmental and nuclear testing. The contract duration is 18 months.

Ed Magda, program manager, pointed out that, "This program will include Northrop's micro-packaging concept, BLIP ™ [(Beam Lead Interconnect Package), and unique plated wire memory and array fabrication technique."

Supporting Mr. Magda as the project engineer for the program will be Ron Johnson.

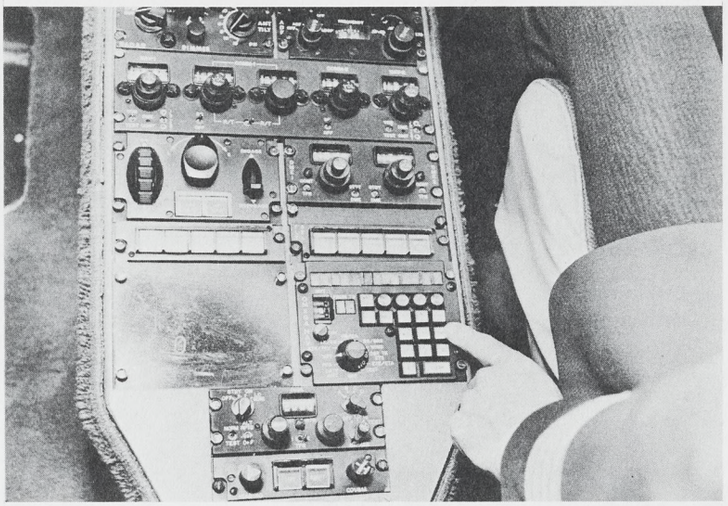
Lindsey Heads Service Roster

Richard A. Lindsey, Program Development manager, Palos Verdes, has reached another milestone in his career with Northrop this month when he will observe his 25th anniversary.

Mr. Lindsey started out as a research analyst on Project 25 which was a forerunner to the Snark Missile program. He was also involved with the assembly and test of the flight analog computer in the missile.

Joining Mr. Lindsey in celebrating anniversaries will be nine members of the division with 20 years of service. They are T.C. Jackson, P.A. Sullivan, K.F. McCready, R.A. Keppel, R.G. Golding, A.L. Moore, P.H. McCleary, G.G. Haeuser and L.B. Turner.

Other service awardees for the month of September; 15 years - A.K. Collins and E.B. Blake; 10 years - Henry Frankenberg, J.A. Peterson, D.A. Nesheim, and E.N. Nobile; 5 years - Horst Rick, A.M. Eid, E.J. Knobbe, F.A. Robb, and K.L. Criswell.



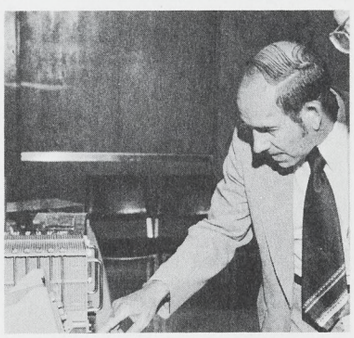
CONTROL AND INDICATOR PANEL of the airborne Omega radio navigation receiver on display at the Brazilian Air Show at Sao Paulo.

Northrop Retirement and Savings Plans

Notice to participants and beneficiaries:

Pursuant to Section 8 of the Federal Welfare and Pension Plans Disclosure Act (and in California, the Retirement Systems Disclosure Law enforced by the commissioner of corporations), you are entitled to examine a copy of the description of the plan and the latest annual report for the plan filed with the Department of Labor at your Industrial Relations or Retirement counsellor's office during their regular working hours.

If you desire, a copy of the plan description and a summary of the latest annual report will be furnished to you within 30 days of receipt of your written request to your Industrial Relations or Retirement counsellor.



SOME OF THE projects he has watched develop within the Electronics Division during recent years are viewed by Richard A. Lindsey, who is observing his 25th anniversary with Northrop this month. The display was shown at Palos Verdes and used for the board of directors meeting held at the facility.

Contest Delayed

Results of the Name the Omega System contest were not available for publication in this issue of the Northrop News but will be posted in the October edition. A delay in the confirmation of the winning name through the patent office was cited as the reason by the selection committee.

Camera Bugs Will Compete for Trophy At October Meeting

Camera Club members will be competing for an elegant trophy furnished by the GAF Corp., Tuesday, Oct. 9, as first prize in the GAF ASA 500 Slide Film Contest to be held in the NRC Clubhouse. Club members are encouraged to begin taking pictures for this competition which is open to all subject matter. Entrees will be judged beginning at 7:30 p.m.

Omega Set Displayed at Sao Paulo

Omega, the first worldwide, general purpose, all-weather navigation system set designed and built for military and commercial applications by the Electronics Division, is on public display for the first time in South America at the 1973 Sao Paulo Air Show.

The total Omega transmitting system, when completed, will consist of eight stations at predetermined fixed positions around the globe. The signals transmitted by these stations are intercepted by the Omega receiver and automatically interpreted and displayed, enabling the operator to constantly determine his position.

Based upon the long range transmission of very low frequency radio waves, the Northrop Omega navigation set will enable aircraft, surface vehicles and submarines to determine their positions within one nautical mile, anywhere on earth, at any time.

Northrop already produces Omega navigation sets for U.S. Navy C-9B and P-3C aircraft, in addition to the BRN-7 Omega utilized by some U.S. Navy submarines. The U.S. Air Force is installing Northrop Omega on board AWACS (Airborne Warning and Control System) and AWRS (Airborne Weather Reconnaissance System) aircraft.

CAROL MARTIN, Electronics Division, found Lion Country Safari to be a relaxing, enjoyable experience and appears to have the situation well in hand. But Northrop employees will have to be a little more restrained the weekends of Oct. 20-21 and 27-28 when Lion Country Safari hosts Northrop at reduced prices. A limited number of tickets are available through Personnel Activities at Hawthorne or Palos Verdes.

AFSC Commends Data Processing

Northrop's Data Processing Department has completed the annual Air Force Systems Command's technical review and results show that Northrop is the first contractor to complete a review of this type without major discrepancies.

An evaluation and assistance team from the AFSC inspected every phase of the data processing operation from utilization of equipment to the adequacy of the annual plan.

In the report disclosing the results of the inspection, Lt. Colonel W.K. Hutchinson, chief, Evaluation and Assistance Team, commended Northrop for the participation and assistance given the team during the inspection, and specifically pointed out the administrative support given by Helen Judd and Nancy Ford of Data Processing.

In commenting on the outstanding performance of the entire department, Paul O. Wierk, Corporate vice president and manager, Data Processing, said, "Everyone within Data Processing is to be congratulated in achieving this most significant honor. Only through conscientious observance of our procedures by all, and the motivation instilled by the directors of each section, were we able to gain this recognition."

Congratulations were likewise received by Mr. Wierk from Northrop President Thomas V. Jones in a letter, excerpts of which stated, "I want to congratulate you and your staff for the outstanding report which you received . . . This is a fine accomplishment and sets a goal for future years . . . I know you will achieve . . . would appreciate your passing along to your people my personal thanks and commendation for a job extremely well done."

Just over 200 personnel comprise the Data Processing organization which serves all of the divisions of Northrop's California operations.

PAUL O. WIERK, seated, Corporate vice president and manager, Data Processing, and his staff directors review results of recent Air Force Systems Command's technical review. From left to right, S.S. Lotz, Operations; E.M. Piper, Equipment Systems Planning; and A.W. Brock, Planning and Control. Not pictured is Tak Yamashita, director of Programming.

Marriott Hotel to be Site of WINCON '74

David N. Ferguson, Corporate vice president and general manager, Electronics Division, has been appointed general chairman of the 15th Annual Winter Convention on Aerospace and Electronics Systems (WINCON), to be held March 12-14, at the Marriott Hotel, Los Angeles.

Mr. Ferguson was named by the sponsors of the convention, the Aerospace and Electronics Systems Society and the Los Angeles Council of the Institute of Electrical and Electronic Engineers.

Mr. Ferguson

Other Northrop personnel participating in WINCON '74 are: D. A. Hicks, Corporate vice president, Research and Technology; D. D. Pretzer, director, Technology Analysis and Plans; G. W. Little, Electronics Division Forward Planning; W. L. Parker, program manager, Program Management office, SMSS Department, Palos Verdes; and L. Kaufold, vice president and manager, Avionics Department, Hawthorne.

WINCON '74 will focus specifically in the areas of laser applications, satellite programs and defense systems, in an effort to offer convention attendees insight into upcoming programs.

NADC Selected Consultant for Penang Airport

The Government of Malaysia has selected Northrop Airport Development Corporation as consultant to design and supervise construction of the $22 million ($51 million Malaysian dollars) Penang Airport Development Project. The contract was signed in Kuala Lumpur.

Selection of the company after a competition between seven international firms of consultants was announced by Tuan Syed Mahadzar, secretary general of the Malaysian Ministry of Communications.

The project entails construction of a new 11,000-foot runway, a new terminal building, and other supporting facilities at the existing airport on the island of Penang, which lies off the coast of West Malaysia.

Penang has become increasingly popular as a tourist resort because of its many attractive beaches. It also is experiencing extensive industrial development.

These factors necessitate the extensive airport expansion to handle the rapid growth of passenger and cargo traffic.

NADC, headquartered near Washington, D.C., is a subsidiary of Northrop.

Olson and Houston Firm Receive Study Contract

Olson Laboratories, Inc., and Bernard Johnson, Inc., Houston, Tex., will jointly conduct an environmental impact study for Houston's Intercontinental and Hobby Airports under a contract with the City of Houston, according to R. L. Gibney, company president.

Planned improvements at Intercontinental include a new terminal for international flights, a new 12,000-foot runway and extension of two existing runways to 12,000 feet. Expansion at Hobby Airport includes two parallel runways, taxiways and roads.

Environmental impact studies are required under terms of the National Environmental Policy Act and the Airport and Airways Development Act before any new airport construction can be authorized.

Olson Laboratories has co-responsibility for over-all program management and coordination and specific responsibility for noise and air pollution study phases of the program. Bernard Johnson, Inc., will conduct the other phases.

Henry W. Wedaa, Olson's manager for Environmental Impact Studies, will be co-program manager and responsible for over-all coordination. Mr. Wedaa has had similar responsibility for Olson's impact studies in St. Louis, Missouri, and Ontario, Los Angeles International and Fresno airports in California.

SCIEA WORKSHOP

James B. Thomas, Corporate manager, Employee Communications, will present a workshop at the meeting of the Southern California Industrial Editors Association Thursday, Sept. 27, from 6 p.m. to 7 p.m. at the Continental Hyatt House, Hollywood. Mr. Thomas will discuss the importance of communications within industry and how to achieve an effective program.

DIVIDENDS

The board of directors of Northrop declared a quarterly dividend of 25 cents per share on Northrop common stock, payable Sept. 22 to common stock of record Sept. 4.

The board also declared a quarterly dividend of 36¼ cents per share on Northrop $1.45 cumulative preferred stock, payable Oct. 6 to preferred stock of record.

TWO APPOINTED SENIOR EXECUTIVES

Thomas V. Jones, Northrop president, has announced the appointments of David A. Burchinal as vice president and senior corporate executive, Europe, Middle East, Near East, and Africa, and Walter L. Curtis, Jr., as vice president and senior corporate executive, Pacific Far East.

Mr. Burchinal and Mr. Curtis will report directly to Mr. Jones and will act as the senior executives of Northrop in their geographic areas of responsibility.

Mr. Burchinal received his BA degree, Phi Beta Kappa, from Brown University. He was commissioned as a second lieutenant in 1940 and retired as a general, USAF, in 1973.

Mr. Curtis received his BS degree from Wake Forest College in 1936 and followed a naval career from aviation cadet to vice admiral through assignments in aircraft squadrons and ships and sea and shore staffs.

Wilcox President Participates In U.S./USSR Symposium

Robert J. Shank, president, Wilcox Electric, Inc., Kansas City, Mo., was one of the United States' representatives and program participants at the recent U.S./Soviet Union Aeronautical Technology Symposium conducted in Moscow. Wilcox is a wholly owned subsidiary of Northrop.

Co-sponsored by the American Institute of Aeronautics and Astronautics and the USSR State Committee for Science and Technology, the four-day symposium covered various phases of air traffic control, aerospace and aircraft technology, airport systems, and air transportation management practices.

Mr. Shank presented a technical paper entitled "Monitoring of Navigational Aids," which dealt with techniques utilized in performance monitoring and evaluating ground-based radio navigation equipment. The presentation also discussed monitoring techniques for new types of navaids such as satellite navigation and microwave landing systems.

Nearly 30 presentations were heard during the symposium. Speakers were leading representatives from the two countries' aerospace industries.

ROBERT SHANK

NORTHROP WORLDWIDE Aircraft Services, Vance Air Force Base Division, received the American Legion and Oklahoma State Employment Service sponsored 'Employer of the Year for the State of Oklahoma' award at the State American Legion Convention in Tulsa, Okla. Northrop Worldwide President Rex H. Madeira, accepted the award from Oklahoma Governor David Hall on behalf of the Vance AFB Division. Photo of award ceremonies shows, left to right, Walter Rapp, American Legion national employment chairman, Governor Hall, Mr. Madeira and Elmore Meshew, Oklahoma department chairman of the American Legion.

Warnecke Scientist Shoots Hole-in-One

Dr. Gunter Dohler, project scientist of Warnecke Electron Tubes, put his tee shot on the 165-yard second hole of the Old Orchard Country Club, Mount Prospect, Ill. into the cup for his first hole-in-one on July 30.

Dr. Dohler, a 22 handicapper in his third year of play, used a 7-iron for his celebrated shot. Playing with Dr. Dohler in the Warnecke Twilight League match were Don Straza and Paul Mungovan.

MARK REISINGER, accountant, Berkeley Scientific Laboratories, Hayward, has found that perseverance pays off as he has attained his BS degree in accounting from California State University at Hayward following 10 years of part time classes and working full time. Mark also served in the military during that period.

Page Awarded Contracts By Australia and Sudan

Under terms of a contract awarded to Page Communications Engineers, Inc., a Northrop subsidiary, by Canberra Television Ltd., the company will design, supply, install and commission new color studio facilities at North Watson, Australia.

The Page system will be augmented by equipment from four manufacturers supplied as "in aid" items.

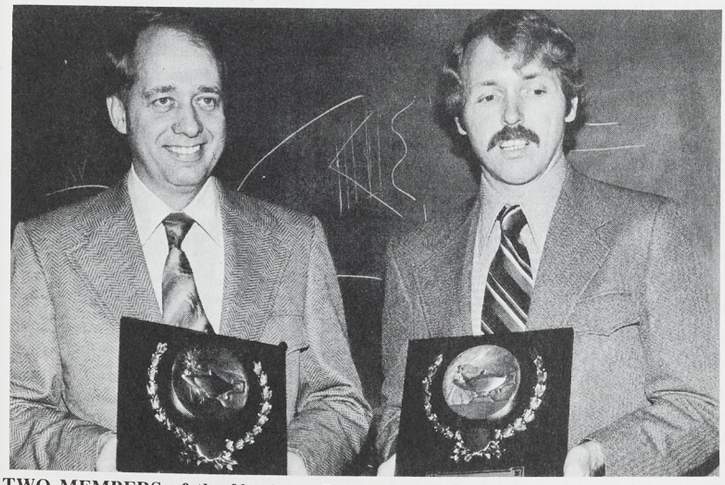
Page is responsible for the overall system performance, and will provide technical supervision and installation, and technical instruction.

Page will also supply a color outside broadcast van, including color cameras, audio and switching facilities, power distribution and heating and cooling equipment.

The van will be delivered to Canberra Television Ltd. by late 1973 and the broadcast studio completed by mid-1974.

Page Communications Engineers, Inc. will design, engineer, construct and install a satellite communications earth station under contract for the Democratic Republic of Sudan. Value of the contract is approximately $6 million and includes maintenance and operation and the training of Sudanese Nationals.

The new earth station will have a 105-foot diameter wheel and track antenna, voice and teletype circuits, a television receiving capability and will interconnect with the existing microwave system at El Masid and will operate through the Intelsat IV Atlantic Ocean satellite.



TWO MEMBERS of the Northrop Research and Technology Center, have been honored by the Institute of Electronic and Electrical Engineers at its annual conference on Nuclear and Space Radiation Effects held at Utah State University. Doctors J.R. Srour and O.L. Curtis, Jr. are shown with prize certificates for their paper entitled, "Short-Term Annealing in Silicon Devices Following Pulsed 14-MeV Neutron Irradiation," which they presented at the 1972 conference.

VISITORS FROM NORTHROP DAKOTA to the Electronics Division were Lee Finstad, left, and John Kallestad, right center, who underwent training in the Financial Planning Department, Hawthorne. Ruth Geller, senior project controller, and Gary Burtsell, right, supervisor, Business Planning, worked with them during their one-week visit.

T-38 Has New Role—The Aggressor

Since its career in the Air Force began in March 1961, the T-38 supersonic trainer has always had key missions to perform, including the checking out of over 27,000 United States Air Force and Republic of Germany student pilots, and being used as the official aircraft of the NASA astronaut training program. But now the Talon has been assigned one of its most important and unique roles: the simulation of enemy fighters, performing the aggressor role in air-to-air combat training.

The 64th Fighter Weapons Squadron, flying the T-38 Talon aircraft, has been formed at Nellis Air Force Base, Nev., as part of the USAF Fighter Weapons School's program to better prepare American pilots to cope with enemy aircraft in the future by practice flying against something that looks and acts like threat aircraft.

Formation of the 64th FWS was the result of extensive study of lessons learned in Southeast Asia coupled with analysis of potential threat aircraft and enemy tactics that a fighter pilot could face in the air. A logical conclusion was that most of these aircraft were small, smokeless and could turn well.

Why the Talon? The Talon was chosen to perform the aggressor role in training because it is small, smokeless and can turn well. The Aggressor Squadron hopes to acquire the F-5E which would be closer to the power and speed needed.

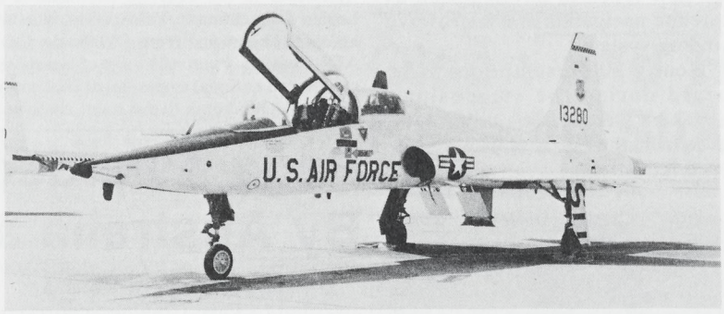
Gain Experience

Flying against Talons, TAC (Tactical Air Command) pilots will gain experience flying against a small, clean-burning airplane behaving just as study has indicated.

The Aggressors also hope to have their aircraft painted in colors that present a realistic representation of camouflage used on threat aircraft, including silver, jungle camouflage and shades of gray and blue that blend into the haze.

The 64th FWS, commanded by Lieutenant Colonel Ted Laudise, will tour TAC fighter bases in the country about two times a year, in addition to flying air-to-air aggressor missions for the Fighter Weapons School at Nellis, and taking part in exercises.

With over 4.3 million flying hours logged, the T-38 has further enhanced its image as an airplane that "becomes more reliable with age."



FLIGHTLINE AT NELLIS AFB is home for squadron of T-38 Talons selected by the Air Force to perform the role of aggressor in the USAF Fighter Weapons School training program.

SQUADRON INSIGNIA of the newly formed 64th Fighter Weapons Squadron, Nellis AFB, depicts the mission that the pilots are doing in T-38 Talon aircraft being used for aggressor training.

Skilling Appointed to Executive Committee

Merrill E. Skilling, chief plant engineer, has been appointed to the executive committee of the Anaheim Chamber of Commerce. Mr. Skilling has represented the Electro-Mechanical Division in the chamber for the past five years and has been a member of the board of directors for the past three years.

He also served as director of the Chamber's Business and Industry Council, chairman of the Industrial Committee, and organized the Environmental Committee now headed by Northrop's Dick McMillan, and is presently heading the City Hall Committee.

DISPLAY SERIES

Northrop non-destructive testing equipment and techniques will be on display Thursday, Sept. 27, from 11 a.m. to 2 p.m. in the Process Control Laboratory, second floor, Plant One, Aircraft Division, and is open to all interested personnel.

This display will be the first in a series to be held quarterly in conjunction with the meetings of the Northrop Non-Destructive Testing Committee which is composed of members from each of the major divisions in Southern California. Committee chairman is Lee Mueller of the Electro-Mechanical Division. Display chairman is William Sturrock, Aircraft Division.

CREDIT UNION

The Northrop Credit Union at Hawthorne has announced the extension of its loan policy to include used boats according to Mary Delaney, secretary-treasurer.

Loan information and the current Boat Trade-in Guides are available in the Credit Union office at Hawthorne.

Historically Speaking . . .

THE NORTHROP P-61 Black Widow was this country's first aircraft specifically designed as a night fighter. It carried radar equipment which enabled it to locate enemy aircraft in total darkness and fly into proper position to attack. The XP-61 was flight-tested in 1942 and delivery began in late 1943. The P-61 flew its first mission as a night fighter in Europe on July 3, 1944 and in the Pacific claimed its first "kill" on the night of July 6, 1944. During World War II, Northrop built approximately 700 P-61s; and in 1946 fabricated 36 more as F-15A unarmed photo-reconnaissance aircraft. The Black Widow pictured is on display at the Air Force Museum in Dayton, Ohio.

Span: 66 ft. 0 in.
Length: 49 ft. 7 in.
Height: 14 ft. 8 in.
Weight: 35,855 lbs. maximum
Armament: Four .50-cal. machine guns in upper turret and four 20mm cannon in belly; 6400 lbs. of bombs
Engines: Two Pratt & Whitney R-2800s of 2100 h.p. each
Cost: $170,000
Maximum Speed: 425 mph
Cruising Speed: 275 mph
Range: 1200 miles
Service Ceiling: 46,200 ft.

Annual Space Fair At Pt. Mugu Set

The 14th Annual Space Fair at Pt. Mugu will be held Oct. 27 and 28, according to Navy Space Fair officials.

Last year the annual event drew more than 160,000 and this year's show is also expected to draw a like number of spectators.

Activity center for the event will be the 40-acre midway where a half-mile of exhibits covering all facets of aerospace programs will be featured.

Twice-a-day air shows will be headlined by the Army's dare-devil parachutists, the Golden Knights, along with top civilian aerobatic pilots. Rocket and missile firings will also take place.

Admission to the grounds, parking and air show will be free, midway attractions will have reasonable prices and a small donation will be solicited for bleacher seats.

The Space Fair is sponsored by Naval commands and units assigned to the Pacific Missile Range Headquarters, Pt. Mugu, and the U.S. Naval Construction Battalion Center, Port Hueneme. All proceeds go to service-oriented charities.

Orient Adventure Tour Meeting Set

Interest in the 22-day Orient Adventure Tour sponsored by the NRC Travel Club continues to build as the Nov. 4 departure date draws near.

A meeting at 7:30 p.m., Sept. 20 at the NRC Clubhouse, Hawthorne, will feature a 16mm sound film and a representative of Tour Agency will be present to answer questions.

Cost per person is $1204 and includes Pan Am DC-10 jet air fare, hotels, sightseeing and part of the meals to Japan, Taiwan, Thailand, Bali, Singapore and Hong Kong.

Contact Jeannie Andrecht, Electronics Division, Hawthorne ext. 542 or Dave Carney, Aircraft Division ext. 2486 for brochures and information.

AUSA Invites Employees to Family Fun Night

The Association of the U.S. Army invites all Northrop employees and their families to their Family Fun Night at Disneyland on Friday, Oct. 19 from 8 p.m. until 1 a.m.

The admission price of $4.75 includes entrance to Disneyland, unlimited use of all attractions, shooting galleries excepted, dancing, bands, shows and live entertainment. Children two years and under get in free.

Throughout the evening, Disneyland and all of its attractions will be reserved for the exclusive use of the private party guests.

No tickets will be on sale at Disneyland.

Contact Personnel Activities, Aircraft Division ext. 2486 for tickets.

SKYLAB SLIDES

Personnel Activities at the Aircraft Division has sets of 20 35mm color slides of Skylab on sale now.

The sets are packaged in a permanent plastic file and feature key scenes of the liftoff, the docking of the astronauts, shots of the earth and outer space slides of the astronauts in action aboard Skylab. The price is $3.50 per set including tax.

A limited number of sets of 20 35mm color slides of Apollo 17, the last flight to the moon, are still available for $3.50 per set, as is a package set of 40 space shuttle survival color slides which includes a cassette with narration and music available on special order for $7 including tax.

READY TO BE LAUNCHED is Navyman Charley Watts as Jim Wildenboer lights JATO bottle. Both Navymen are members of the Navy's VC-1 Fleet Composite Squadron, Hawaii, and were 'hamming it up' using an MQM-74A Launching Platform following a recent flight of the Northrop target drone. (U.S. Navy photo)

Bancroft Family Will Host Foreign Exchange Student

Varney Bancroft, Engineering technical assistant, Electronics Division, Hawthorne, and his family are looking forward to this school year as being an interesting and rewarding one. The reason is, they will be sharing their home with Ana Lopez Landache, a 17-year-old foreign exchange student from Spain.

Ana was awarded an international scholarship from the American Field Service to live in America for one year with the Bancrofts and attend Leuzinger High School with Annette Bancroft.

When Beverly Bancroft was selected to spend the summer school session in Hasselholmn, Sweden, last year, the Bancrofts decided they would like to volunteer to be a sponsor for a foreign exchange student, also. In the spring, they were notified they had been selected to host Ana.

Ana is a philosophy major with special interests in literature and history. Her favorite sports are swimming, mountain climbing, horseback riding, and ping pong. She attended the Colegio "La Anunciata" in her hometown of San Sebastian which is a port city on the northern coast of Spain.

"We are grateful to the American Field Service for the opportunity to be a part of this outstanding international relations program, and are looking forward to a rewarding year with Ana," Mr. Bancroft said.

THE BANCROFTS, Varney, left, daughter Beverly, and Mrs. Bancroft, are pictured with Ana Lopez Landache, second from right, who will be staying with them as part of the American Field Service student exchange program.

USAF-ICBM PIONEERS SCHEDULE REUNION

Military and civil service personnel stationed with the United States Air Force elements at Inglewood, Calif., which were responsible for developing the Atlas, Titan and Minuteman Intercontinental Ballistic Missiles and the Thor IRBM will hold a twentieth anniversary reunion marking the establishment of the ICBM program in 1954.

These personnel stationed with the Western Development Division and the Air Force Ballistic Missile Division of the former Air Research and Development Command, and the Ballistic Missiles Office of the former Air Materiel Command during the period Aug. 1954 to Jan. 1958 are invited to attend, as are personnel with the then Guided Missile Research Division of the Ramo Wooldridge Corp.

The reunion is scheduled for Aug. 3, 1974 at the Space and Missile Systems Organization Officers Club, Los Angeles.

Information on the reunion may be obtained by writing USAF - ICBM Pioneers, P.O. Box 1249, Hawthorne, CA 90250.

Seafari Club Cards Available

Marine World-Africa USA is Northern California's top outdoor attraction and is a "must see" for all visitors to the Bay Area.

Employees and their families can enjoy the park at a 10 per cent savings on the regular admission price with the new Seafari Club Card.

Marine World-Africa USA is located on the shores of San Francisco Bay in Redwood City, just minutes south of the San Francisco International Airport off the Bayshore Freeway (U.S. 101), at the Ralston Ave.- Marine World Parkway-Belmont off ramp.

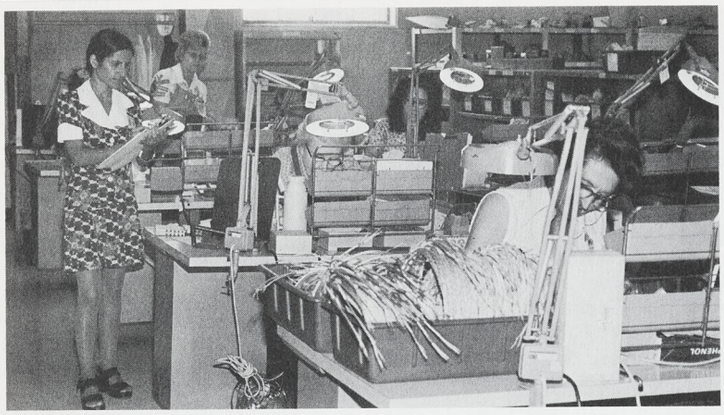
The park is open seven days a week from Memorial Day through Labor Day from 9:30 a.m. to 6 p.m.

Seafari Club Cards are available at Personnel Activities, Aircraft Division.

NO, THIS IS not Shamu, the famed killer whale of San Diego's Sea World. This is Nepo, Marine World-Africa USA's killer whale who is asking his trainer, Dave Wooster, "Are all those people out there really members of the Seafari Club?"

ENCYCLOPAEDIAS

The Northrop Library, Aircraft Division, is offering the Encyclopaedia Britannica, 1973 edition, featuring 24 volumes for $298 to Northrop employees. For information call Ramesh Taneja, ext. 1006.



RIAH AL MAZEEDI, standing, is shown performing a time study in the Electrical section at the Aircraft Division. Riah was one of the industrial engineering students employed by the Industrial Engineering Department for the summer as part of Northrop's continuing education program where she performed a variety of duties.

AS A TELEPHONE RECEPTIONIST

Student Gets Her First Job

Trina Jo Crawford came out of a dark world into her first job when she joined Northrop's Electro-Mechanical Division this summer.

Trina Jo, 20, has been blind from birth. Her summer job with Northrop's Anaheim operations was arranged by the Braille Institute of Anaheim. The institute canvassed employers in Orange County, pointing out how difficult it is for high school students to get summer jobs and how infinitely more difficult it was for blind students to find summer employment.

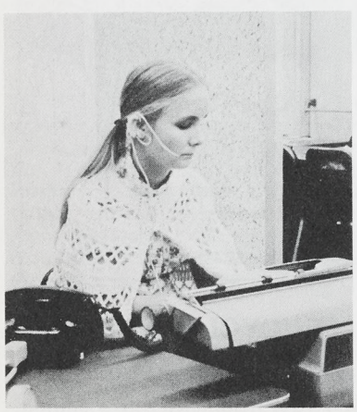
Accepted

Trina Jo was accepted as a telephone receptionist in EMD Marketing. The telephone bells were adjusted to a different pitch for each line so she could recognize which one was ringing, and she typed raised tapes in Braille to identify each bell tone with the person.

She took incoming calls on her Braille-writer — a typewriter that punches raised Braille characters she could read with her fingertips. Then using this for reference, she transcribed the information on a regular typewriter for the recipient of the call. She learned to use the standard typewriter when she was nine years old.

Despite her handicap, Trina Jo is living a normal life. She graduated from high school, goes on dates, and is entering college. She has not decided on a future career, but is leaning toward either counsellor or dietician.

And as to her feeling toward her first job, "It feels good to be on my own."



TRINA JO Crawford transcribes telephone messages on regular typewriter which she took on her Braille-writer.

Hawaiian Holiday Plans Under Way

A kickoff meeting was held at the NRC Clubhouse, Hawthorne, on Sept. 14 by the Travel Club for the annual NRC-sponsored Yearend Hawaiian holiday.

This will be the sixteenth annual Hawaiian Christmas and New Year's Holiday for 11 days fully escorted at a cost of $495.

Travel will be via United Airlines jumbo jet both ways to depart Dec. 22 and return Jan. 1. The price includes four islands — Oahu, Kauai, Maui and Hawaii; Christmas dinner at the Kauai Surf Hotel; lunch at the Volcano House on the Kona Coast and a Kona Coast cruise; all first class beach front hotels; a gala New Year's Eve party and show in the Crown Room of the Naniloa Surf Hotel. Sightseeing, baggage handling and tips are also included.

Reservations are now being accepted. Sign up and make your deposit. Complete brochures and information are available at all Personnel Activities offices, Aircraft ext. 2486 and Electronics Hawthorne ext. 542.

Comment . . .

The Northrop News will publish in each issue a selection of letters which, in the sole judgment of the editors, are of the broadest general interest. Remember that the best sources for information about Northrop practices are your "Working With Northrop" booklet or your immediate supervisor. Letters should be addressed to "Comment, Northrop News, 17240."

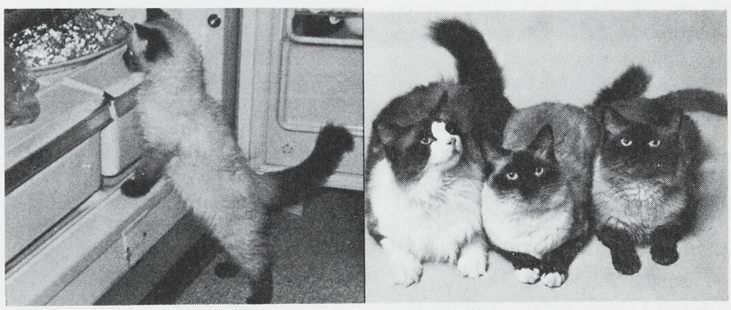
* * *

"In the recently distributed insurance certificates, I noted with interest that most of the insurance has now been made assignable. A discussion of this new feature in the Northrop News would be of interest and potentially very valuable." — Unsigned

"All or part of the proceeds of life insurance policies owned by the insured person are normally subject to death taxes payable by his or her estate. In many cases these taxes can be avoided if the insured person assigns all incidents of ownership in the policy to his or her spouse or to some other person. For some time there was a question as to whether an employee could, for tax purposes, transfer all his or her incidents of ownership in a group life insurance policy such as the policy maintained by Northrop for the benefit of its employees.

"However, the Internal Revenue Service has now ruled that it will recognize an assignment of group life insurance if certain technical requirements are met. Northrop has satisfied these technical requirements so as to make this estate planning tool available to its employees.

"For some Northrop employees such an assignment may be advisable. However, there are many cases in which such an assignment could be a serious mistake. The advisability of such an assignment depends entirely upon the employee's individual circumstances, and it is impossible for the company to furnish any general advice in this area. Assignment forms are available from Industrial Relations, but before making any such assignment an employee should obtain professional advice as to its advisability in the light of his or her circumstances. No Northrop employee is authorized to give such advice." – Howard G. Rath, Jr., Northrop Corporation assistant treasurer.



DURING THE 'DOG' days of summer, Ragdoll Shadow Moon is a cool cat who seeks the refrigerator of his owners, Vicki and George Worden. The Ragdoll is a new breed of cat. At right, the three cats are posing for photo.

Wordens Own Odd Pet Collection

There is something new in cats.

And George Worden, supervisor, Order Control, Northrop Architectural Systems, has one to prove it. It is a new breed known as Ragdoll, which has the blue eyes and markings of a Siamese, but is in no way related.

About a year ago George and his wife, Vicki, saw a story about the new breed and bought one. They discovered that the Ragdoll grows for three years, weighs as much as 30 pounds and becomes three feet long and 18 inches high.

"They behave more like a dog than a cat," he reports. "Our Shadow Moon likes to ride in an automobile, follows us around and loves to be carried and cuddled. At full growth the Ragdoll has a plume-like tail nearly a yard long."

The Ragdoll is still rare. There are three distinct markings with the more popular markings costing as much as $225 each.

The Ragdoll Shadow Moon is not the only unusual cat the Wordens own. They have a Manx, the famous tailless cat from the Isle of Man, and a Siamese who loves bananas and other fruit. The three cats share a bed with the Wordens poodle, Melody, who acts like she is a cat, too.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Ambassador SST, 1969 2-dr., a/c, auto., p/s, p/b, $995. 714-544-7349

Cortina, 1969, 28,000 mi., $695. 213-323-3801.

Corona, 1969 Toyota, a/c, r/h, 4-spd., $1199. 213-966-1250. 213-966-2335.

Pontiac, 1967 4-dr. h/top Catalina, a/c, p/s, p/b, 1-owner, $875. 213-324-8856.

Dodge, 1970 Polara, air, p/s, p/b, 4-dr. h/top, $1350. 213-325-6546.

Van, 1972 Ford Econoline, ¾-ton, 351 eng., auto., long wheelbase, 6000 mi., $3250. 213-322-6655.

Cadillac, 1968 SDV Landau top, a/c, stereo, full pwr., $1695. 213-348-0892.

Chevrolet, 1940 coupe, V-8, 4-spd., new high perform. eng. & drive train, $1000. 213-530-3299.

Lincoln, 1966 Continental, all extras, $1000. 213-328-7989.

Motorcycle, 1972 Suzuki, 400 cc, little used, $700. 213-927-8972.

Toyota, 1970 Mark II 4-dr. station wagon, r/h, $1550. 213-329-4090.

Motorcycle, 1971 Triumph 500, $850. 213-378-8905.

Comet, 1964, auto. trans., 6-cyl., $150. 213-374-5113.

Pickup Truck, 1934 Ford, $150. 213-320-7574.

Pontiac, 1969 9-pass. station wagon, Catalina, V-8, auto., $2195. 213-375-8536.

Datsun, 1968 Roadster, mag whls., convt. vinyl top, $700. 213-676-1580.

Plymouth, 1969 Roadrunner, a/t, Ansen rims, $1200. 213-324-8266.

Chevrolet, 1962 S/S 2-dr., p/s, $200. 213-532-0015.

Motorcycle, 1972 Har-Dav. Sportster, semi-custom, 3000 mi., $1800. 213-530-5076.

Lincoln, 1962 Continental, fact. air, p/s, p/b, $285. 213-679-1637.

Volkswagen, 1960, sun-roof, radio, $375. 213-374-4953.

Plymouth, 1970 Barracuda, 440 eng., all power, $1800. 213-376-6668.

Pinto, 1971, all deluxe, extras, auto. trans., a/c, $1525. 213-541-1331.

Volkswagen, 1966 Fastback, approx. 3000 mi. since o/haul, $700. 714-644-7099.

Motorcycle, Honda, 1970 CL 350, $500. 213-377-5897.

Pickup Truck, 1960 short bed Chev., 327 eng., 30,000 mi., turbo hydro, w/gem top camper shell, $900. 213-672-7359.

T-Bird, 1963, pwr. & a/c, $500. 213-941-1865.

Mercedes Benz, 1966 230S, AM-FM radio, p/s, p/b, sun-roof, $1800. 213-376-4641.

Datsun, 1968 station wagon, auto. trans., 1600 cc eng., dual carbs, $600. 213-695-5476.

Thunderbird, 1970, all power access., $2950. 213-387-7587.

Plymouth, 1965 Fury III wagon, a/c, r/h, p/s, p/b, rack, orig. owner, all maint. records, $445. 213-377-1074.

Motorcycle, Honda, late 1971 CL-350, $450. 213-675-8246.

Chevrolet, 1965 Impala, r/h, auto. trans., p/s, $285. 213-679-3889.

Motorcycle, 1961 Matchless, 500 cc, setup for dirt, $300. 213-633-4548.

Chevrolet II, 1966, r/h, auto. trans., $525. 213-327-9203.

Motorcycle, Harley 74, '62 pan lower end, '68 shovel upper, many extras, $2500. 213-754-3665.

Ford, 1960 Falcon, new tires, batt., 3-spd. stick, $250. 213-645-5322.

Truck, 1964 ½-ton Chev., a/c, w/1966 8½' ½ cabover camper, sleeps 4, $1100. 213-830-3339.

Chevrolet, 1957 2-dr. w/hi per Vet 327 eng., dual Carter 4-bbl. carbs., other access., $625. 213-371-5450.

Miscellaneous For Sale

Table, maple dropleaf, 2 matching chairs, $30. 213-677-7421.

Piano Rolls, box of 73, $35. 213-892-8268.

Bicycle, Schwinn boy's 20", $40. 213-869-4885.

Pro Comb, Norelco, $10. 213-373-4298.

Stove, Sears, gas, $25. 213-676-5101.

Pool, portable, 15' x 42" rnd., complete, all attachs., $50. 213-676-9518.

Miscellaneous For Sale

Piano, Kohler Campbell, $600. 213-838-5416.

Bicycle, built for two, Huffy, 1 yr. old, $75. 213-530-0311.

Electro-Magnets, for travel trailer brakes, 6 v., 2 sets, $20 ea. 213-679-6982.

Shirts, man's, assorted, sizes 14½, 15, 15½, 75c ea. 213-756-2346.

Air Horns & tank, for boat or truck, $65. 213-675-1000.

Valve, Sportsways on Scubapro tank w/back pac & Scubapro Mark I reg., $120. 213-675-4306.

Trailer, 1964 Terry, 16', water tank, elec. pump, gas refrig., awning, $1095. 213-678-1759.

Fishing Boat, alum., 14', trailer, new oars, boat cover, $295. 213-371-7084.

Record Turntable, auto., McDonald, $25. 213-327-4267.

Copper Tubing, 3 coils, 60 ft. lg. ea. coil, Anaconda, ½" type L, $60 lot. 213-421-0167.

Sewing Cabinet, maple, Early American, $30. 213-542-2513.

VW parts, 311 ser. carbs, gen., starter, most eng. parts, complete front end unit, w/disc brks., $210. 714-892-3255.

Range, gas, white, $55. 213-322-8013.

Maternity Clothes, size 11-12, $35. 213-371-3310.

Truck Engine, 1960 283 Chev., $50. 213-378-3013.

Office Desk, full size, swivel chair, $75. 213-821-9110.

Tire, Uniroyal glass belted, G78-14, $10. 213-377-7670.

Sailboat, Sabot, windward, fiberglass, $150. 213-360-7198.

Dinette Set, 5-pc., solid maple, 3' round table w/leaf, $40. 213-547-4062.

Dog, Keeshound, AKC reg., 9 mos. old, female, $90. 213-320-8297.

Table Lamps, 3-way, walnut w/brass, $30. 213-530-3521.

Bedroom Set, 6-pc., no-mar Mediterranean, $150. 213-374-7625.

Mattress & spring, king size, $200. 213-329-3152.

Piano, Kimball designed Whitney console, walnut, $1400. 213-695-7630.

Mower, 18" Toro reel-type, w/grass catcher, $50. 213-644-3531.

Shag Rug, 9x12 oval, orange/green/gold, $65. 213-545-3495.

Tent Trailer, Ward's Carefree, 1966, $200. 213-320-1431.

Quarter Horse, permanent reg., chestnut mare, 5 yrs. old, $1200. 213-676-6187.

Twin Bed, almost new, $40. 213-395-4801.

Gun, Remington 1100 12 ga. vent rib 3" mag, $175. 714-847-5429.

Air Conditioning Unit, w/all install. parts, fits Fords w/V-8 289 eng., $150. 213-423-1363.

Bicycle, girl's 5-spd., $50. 213-343-7880.

Coat, sheared beaver, fox collar & bottom trim, burgundy, $1500. 213-532-6246.

Dog, Norwegian elkhound, ch. sired, AKC, $200. 213-784-3802.

Lantern, 2-mantle Coleman, w/carrying case, $15. 213-323-7171.

Ski Boat, 17' Powercat Hydro, 80 h.p. Merc. motor, trailer, ski equipt., $1000. 213-866-8774.

Pup, American pit bull terrier, tan w/black mask, 9 mos. old, papers, all shots, doghouse incl., $150. 714-897-2340.

Piano, upright, recently tuned, $250. 213-391-7014.

Golf Bag, man's, used, $10. 213-374-4517.

Trumpet, Holton-Clarke model, $25. 213-676-0666.

Lake Boat, 13' Glaspar, Sears trailer, remote steer. controls, oars & anchor, $140. 213-477-3190.

Dishwasher, blt in, Westinghouse mod. SUH5A, white, $75. 213-373-1622.

Range, elec., G.E., white, $35. 213-883-2258.

Trailer, Field & Stream, 17½', refrig., stove, sleeps 4, $850. 213-373-4943.

TV, 25" b&w console, remote control, $50. 213-373-4445.

Diamonette Ring, 2½ ct. ladies cluster, 14 carat gold, $170. 213-373-5050.

Drafting Machine, K&E, 24" arms, $70. 213-675-5258.

Coffee Table w/2 lamp tables, glass-topped bleached mahogany w/mahogany bark legs, $125. 213-644-3922.

Air Conditioner, Amana window-type, $75. 213-833-7903.

Range/dble, eye level ovens, 220V., elec., stainless/white delux Frigidaire Flair, only slightly used, $225. 213-384-5962.

Chow Tables, ¾" smoke glass, 2' sq. on gold-leafed pedestal, $25 ea. 805-498-1175.

Pups, old English sheepdog, sire & dam AKC & OFA certified, avail. after Oct. 1, $250 & up. 714-962-4860.

Bicycle, Raleigh, 3-spd., new tires, $45. 213-346-6255.

Bowling Ball, 16 lbs., black, $5. 213-376-4831.

Exerciser, Isometric, Bennstrom V bar, $9.95, other boutique items. 213-474-5726.

Civil Air Patrol Group 17 Visits Aircraft Division

Senior and cadet members of Group 17 of the Civil Air patrol recently visited the Aircraft Division.

South Bay Group 17, consisting of CAP squadrons from Santa Monica to San Pedro, saw the P530 Cobra mockup and the Northrop Flight Simulation facility, during their visit.

The tour of the P530 mockup was conducted by Charles Whiting of the P530 program office and demonstration of the flight simulators was under the direction of Doug Linder, manager of the facility. Technical presentations were made by Walt Watson and Vern Carter.

Cadets and senior members of the Civil Air Patrol engage in a comprehensive program of aviation-related activities including leadership training, aerospace education, search and rescue missions, and flight instruction. Cadet membership is open to boys and girls 14 and older, and senior membership is open to men and women 18 and over.

The Hawthorne Squadron 77 of the CAP under the command of Capt. John Scherer meets every Tuesday at 7:30 p.m. at the old Navy Reserve Center, 4455 W. 126 St., Hawthorne. Visitors are welcome.

SOUTH BAY GROUP 17 is shown in front of the P530 Cobra mockup during a recent tour of the Aircraft Division.

Miscellaneous For Sale

Camping Trailer, 1962 Kreuger Travelaire Viking, weatherproof 8' x 10' alum. clad plywood cabin closes to 5' x 8' trailer, sleeps 3, many extras, $175. 213-434-1795.

Cassette, AMPAX stereo, walnut spkrs., $75. 213-363-6996.

TV, 25" Admiral b&w, w/stand, $30. 213-324-1908.

Pup, ½ Irish setter, ½ collie, 6 wks. old, $10. 213-732-1813.

Wanted To Buy

Typewriter, elec., good condition. 213-672-5238.

Pickup Truck, small, Datsun, Toyota, will pay blue book price. 714-821-8651.

Camera, 35 mm single lens reflex, new or like new. 213-542-8235.

Free (To Be Given Away)

Washer & refrigerator wanted in working condition for distressed family, Noraid Administrator, Aircraft ext. 2486.

Kittens & young cats, spayed/neutered, to good homes only. 213-675-5920.

Pup, 10 mos. old, mixed shepherd, female. 213-322-2332.

Personals

Anyone interested in forming a sky diving club, call 213-372-4970.

My sincere thanks for the kind wishes & assistance during my recent illness & the sympathy expressed upon the passing of my mother. BERNIE SCHIER.

I wish to express my appreciation to all my co-workers for the retirement party. My wife Wilma joins me in wishing each one of you good health & happiness. JACK SANDS.

I wish to thank all my Northrop friends for the retirement party & gift. I shall never forget Northrop & the great people that work there. NORM TURNER.

Wanted, play equipment & toys that can be used for underprivileged kindergarten, such as trikes, play house furniture, trucks, puzzles, rugs, TV, b/case, small tables & chairs. 213-377-5362.

Want ride from Electro-Mechanical Division or vicinity to Serra, Oct. 26, return Oct. 28. 714-832-6979.

Thank you for the retirement party & gift & to all who made my work at Northrop enjoyable & productive. The best of luck to all. EARL E. PARKS.

Personals

Car Pool, 8 a.m.-4:45 p.m., Monterey Park or W. San Gabriel Valley, Electronics Hawthorne ext. 647, 213-266-3999.

Thank you all my dear friends for the great bon voyage. CANDY TUDISCO.

Ride Wanted, Heil & Beach Blvd., Huntington Beach, 8 a.m.-4:45 p.m., Aircraft ext. 2254, 714-842-5713.

The very kind thoughtfulness of Jim's dad's many Northrop friends will always be remembered by us. Our heartfelt thanks to all of you for the Heart Fund donation, Masses, flowers & cards. ESTELLE & SON JIM CELONI.

Ride wanted, from 107th & Osage Ave., 8 a.m.-5 p.m. or 7:30 a.m.-4:12 p.m., Aircraft ext. 2586, 213-671-8890.

My sincerest thanks to everyone for their concern & prayers during my recent illness. ROSE PRYOR.

For Sale Or Trade

Chevrolet, 1952, 2-dr. h/top, wire rims, $350 or trade for 1956 Ford pickup. 213-638-6457.

Motorcycle, 1972 Suzuki GT 380, within warranty, $695 or trade for old VW. 213-833-6045.

Cabin Cruiser, 16', bait tank, V-4 80 h.p. Evinrude, 4 hrs. since major o/haul, 2 bunks, $900 or trade for cab-over camper or Lincoln welder. 213-320-1677.

Aircraft Engine, Cont. A-65, low time, all std., $325 or trade for Cont. 0-200, any cond. 805-947-3992.

NORTHROP NEWS

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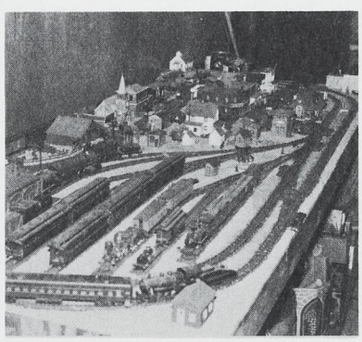
Managing editor, Rosemary Hussey; editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Peter Goodall, Precision Products Department. Correspondent: Wanda Fisher, Northrop Architectural Systems.

Mailing address: Northrop News, 172/40, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

NRC PICNIC HIGHLIGHTS

Com-Bus Signups Still Open

The Com-Bus service runs are now operating smoothly for employees traveling to the Hawthorne facilities of Northrop from outlying areas. Personnel that wish to join the Com-Bus from their area may contact the following for details: San Fernando area — Don Biedermann, ext. 4221; L. A. Geib, ext. 4975; W. L. Buffington, ext. 2643; Bill Bjerke, ext. 1016; and Murray Bhestein, ext. 4471; Orange County area—Sharon Penn, ext. 2941; Paul Kelly, ext. 1737; Clarence Lees, ext. 1225; Paul Eckroth, ext. 1465; Marge Bowser, ext. 5167; and Alen Jacobson, ext. 2248; Palos Verdes area — Brian Malins, ext. 2245.



A BUSY MAN is Jim "Dusty" Rhodes, technician assistant, Hawthorne, pictured above during pause between heat races in the Hilman he restored to running condition and races in dirt track competition around the Southland. Jim has won several heat races and has finished second in different main events. Another of his restoration projects was a 1934 Chevrolet which he has shown in various car shows as a member of the Chevy Vintage Club of America. Photo at right shows the railroad yard and western town layout Jim built using a 3½ millimeter-to-one foot scale. Many of the buildings and railroad cars were designed and constructed by Jim in his Torrance garage.

Management Club To Hear General Manager and Staff

The Oct. 17 meeting of the Management Club promises to be one of the most diverse, informative meetings to date, according to Jim Brust, club president.

"We are looking forward to a lively discussion on all phases of the division operation as members will be able to talk directly to the general manager, David N. Ferguson, and the various department vice presidents and managers during a question and answer session which will follow the dinner," Mr. Brust said.

Prior to the dinner will be a social hour which will feature the Paris Air Show film highlighting the annual French spectacle. "We also plan to discuss the forthcoming end of the year dinner-dance scheduled for Saturday Nov. 10," Mr. Brust added. The annual event will be held aboard the Queen Mary in Long Beach.

WARREN LINDSAY, left, NRC Golf commissioner, presents trophies to Harlan Laurinat, center, and Ed Smith, who fired holes-in-one during Golf Club play. Harlan carded his on the par three, 110-yard ninth hole at the Fallbrook Country Club, and Ed aced his on the par four, 179-yard eighth hole at Alondra Park.

Northrop Dakota to Hold Open House

Northrop Dakota will hold an open house and appreciation day for the general public Oct. 6 at the New Town Facility in observance of its third year in operation according to Jerry Howell, manager.

Featured will be hardware and photographic exhibits as well as two color motion pictures on aviation which will give the residents of the area an overview of the operation. Northrop Dakota produces electronic components and subsystems and is a wholly owned subsidiary of Northrop.

CHUCK FULLER, holds 15½ inch golden trout which he caught in Goethe Lake amid the High Sierras.

Sea Anglers Land Additional Awards For Prize Catches

The Northrop Sea Anglers have received eight more achievement buttons for prize catches according to Elmer Baldwin, commissioner.

The buttons, which are awarded to each individual per requirements of the Southwest Anglers Button Award Assn., were given to the following individuals for their catches listed: Tom Brady, cow cod, 16 pounds, 5 ounces; Ron Adams, sand bass, 6 pounds, 4 ounces; Gordon Singleton, cow cod, 14 pounds, 9 ounces; Dennis Okada, yellowtail, 24 pounds; Mel Parrish, cow cod, 22 pounds, 3 ounces; Rick Ecklund, yellowtail, 27 pounds; and Bob Meffan, cow cod, 18 pounds, 2 ounces.

A special button, a first for the club, was awarded to Chuck Fuller for a 15½ inch golden trout caught at Goethe Lake in the High Sierras around 11,500 feet above sea level.

BLOOD DONOR PINS commemorating the one-gallon-donated mark are awarded by Arnah Pakes, Medical, to Tom Brady, left, chief, Personnel Administration, and Fred Campos, inspector, Hybrid Lab, Hawthorne. The two donors hope you will join them in line again this Tuesday, Sept. 25, when the Bloodmobile vists the Electronics Division from 9 a.m. to 1:30 p.m., in the lunchroom annex.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California Vol. 31, No. 10 October 1973

Twenty-Three Observe Service Anniversaries

Robert H. Ashley, project engineer, Navigation Department, is marking his 25th anniversary this month with Northrop and among those first to congratulate him was Roy Kaufold, vice president and manager, Avionics Department, who is observing his 20th anniversary in the division.

Mr. Ashley began his career at the Aircraft Division in the Hydraulics and Landing Gear Systems section on the X-4 program at Hawthorne. Later he was in the B-49 program until its conclusion and then transferred to the Electronics Division and Project 25.

Mr. Kaufold's first job in the Electronics Division was as a technician on the nighttime star tracking project in Project 25.

Joining them in celebrating their 20-year anniversaries during October are Mildred Russell, Willis Stroub, Jr., and Albert Christensen, at Hawthorne; Charles Fuller and Ronald Brooks, Palos Verdes; and William Webster, Western Avenue facility.

Fifteen-year awardees are Warren Lindsay and Dennis Okada, Palos Verdes; 10 years: William MacCorkell, John Heltne, and Dean Karr, Palos Verdes; and 5 years: Hugh McCaskill, Stewart Ahnin, Delaine Glenn, Leatrice Benton, John Noland, Rosemary Kuczer, and Charles Bell, Hawthorne; George Towner, Palos Verdes; and James Leyden and Ronald Perry, Berkeley Scientific Laboratories.

PAUSING DURING TEST analysis in the control center ground station of the Army In-Flight Data Transmission System are left to right, Don Schultz, Hermann Rittner, and Chuck Lotspeich. The division has been granted funding by the Naval Air Systems Command to modify the AIDATS for the Army Mohawk OV-1D aircraft as the first phase of an $8 million contract.

Ferguson and Kaufold to Address Management Club Members

David N. Ferguson, Corporate vice president and general manager, and Roy Kaufold, vice president and manager, Avionics Department, will be the featured speakers at the Management Club meeting tonight at Lococo's in Manhattan Beach. Social hour will begin at 5:30 p.m.

The general manager and Mr. Kaufold will each address the club members and then hold an open question and answer forum for written or verbal questions from the assemblage.

Also participating in the forum will be Don Avallon, manager, Navigation Department; A. B. Lipscomb, manager, Tactical Avionics Department; and Henry Frankenberg, manager, Operations and Support Services.

Prior to the discussion period will be a showing of the Paris Air Show film featuring the aerobatics of the F-5E Tiger II.

Members will also hear the final preparations for the Nov. 10 Management Club dinner dance to be held aboard the Queen Mary.

CONGRATULATIONS are given by Roy Kaufold, vice president and manager, Avionics Department, to Robert H. Ashley, right, project engineer, who is observing his 25th anniversary with Northrop this month. Mr. Kaufold also observed his 20th anniversary date with the Electronics Division.

BULLETIN

Donald E. Meyer, Special Projects Department, Hawthorne, has been named the winner of the Name the Omega System contest which was conducted during August throughout the Electronics Division. Mr. Meyer's winning entry was Cardinal which refers to the four cardinal points of the compass. Don Avallon, manager, Navigation Department, made the announcement and said, Mr. Meyer will be receiving the $200 savings bond award.

Division Will Begin AIDATS Modifications

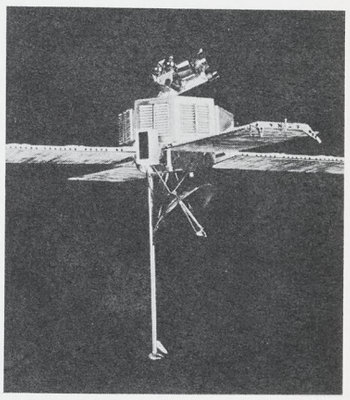
The Electronics Division has been authorized $938,000 from the Naval Air Systems Command (NASC), as part of the first phase of an $8 million modification program for the Army In-Flight Data Transmission System (AIDATS). This award is a continuation of an existing contract with NASC for the development of a tri-service data transmission system.

Northrop, which serves as the integrator and manager for the system, will modify, in the first phase, the data link and ancillary equipment by changing the existing C and K band link to an all K band system. This program has a potential value in excess of $40 million through 1978.

"We have developed this capability as the prime contractor for the Joint Service In-Flight Data Transmission System (JIFDATS). We believe the Army's selection of the AIDATS configuration for the OV-1 Mohawk represents a major step forward in the field of reconnaissance," said A. B. Lipscomb, manager, Tactical Avionics.

The funding, which will cover the modification of recently developed link equipment for specific applications to the Army OV-1D Mohawk aircraft, follows comple-

(See AIDATS, Page 8)



THE ELECTRONICS Division has had several programs with NASA during the 15 years the space agency has been in existence and among them was the Mariner Mars program in 1969 which utilized sensors developed by the division. For a review of all Northrop's projects with NASA through the years see pages 4-5.

BSL Announces Sale of Business Data Systems

Berkeley Scientific Laboratories, a subsidiary of Northrop, has announced the sale of four BDS 2000 business data systems to medical facilities in the western United States.

Produced by BSL Northrop's Business Data Systems Division, Torrance, the systems will be installed later this year in the facilities of Ridgecrest Medical Clinic, a group practice located in Ridgecrest, Calif.; Associated Pathologist Laboratories, Las Vegas, Nev., a clinical laboratory; San Diego Radiology Medical Group, San Diego and the La Mesa X-Ray Medical Group, La Mesa, Calif.

Featuring video display terminals in conjunction with a high speed printer, mini-computer and the disc memory storage, the BDS 2000 will provide patient billing and accounts receivable, automated insurance form processing and a complete management information reporting system for each facility.

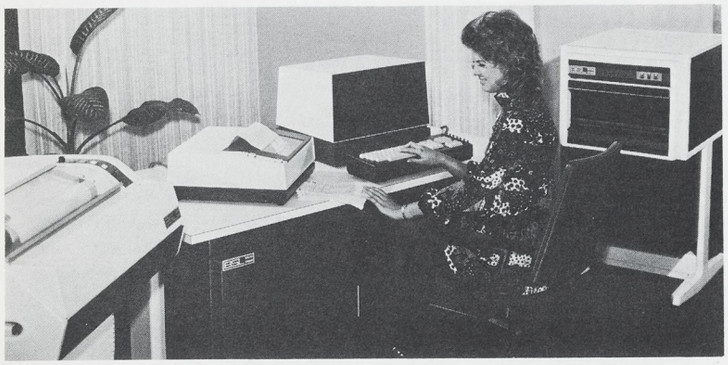
"In designing the 2000 system, we have approached the data automation needs of the medical industry with specific reference to the unique aspects of the clinical laboratory and group practice," comments A. T. Migliori, manager of the BSL Northrop Business Data Systems Division. "The software package purchased by each individual customer is tailor-made to their requirements. In this way, our customer receives what is needed to do the job for him, and does not have to pay for unnecessary hardware or software."

Berkeley Scientific Laboratories has also announced the sale of a new, low-cost business data system custom designed for the furniture industry to Commercial Chair Company, Los Angeles.

Designated the BDS 1000, the system will provide sales order processing, billing and accounts receivable, inventory control, production scheduling, payroll, accounts payable and a general ledger program for Commercial Chair.

"Featuring a total management information reporting capability, the BDS 1000 system dramatically reduces the time required to make important business decisions," adds Mr. Migliori. "With a variety of information instantaneously available, problems which formerly took hours, if not days, to solve are expedited with the aid of the BSL system."

The BDS 1000 system includes a minicomputer, disc memory storage, high speed printer and video display terminal.



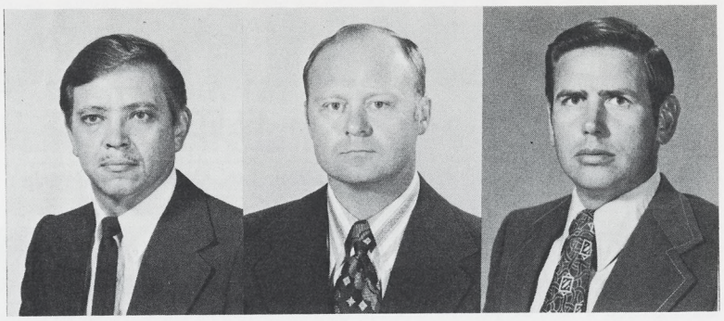
BSL HAS SOLD four BDS 2000 business data systems to medical facilities in the western United States.

NRTC PERSONNEL RECEIVE THANKS

Northrop Research and Technology Center personnel were recently cited for the outstanding Physical Science Symposium they conducted for the high school students through the auspices of the Department of Education at the California Museum of Science and Industry, Exposition Park, in May of this year.

Dr. Donavon D. Pretzer, director, Technology Analysis and Plans, received the letter of thanks from Clarice Lolich, director of Education at the museum, who stated, "You, Dr. Pretzer, and your committee are to be congratulated for the superior quality of the symposium . . . Those of us who have worked so closely with this program have judged its merit after reading the student evaluations and after having observed the organization, the presentations, and the overall impact of this educational venture. We are deeply grateful."

Among those working with Dr. Pretzer on the symposium were Bob Johnson, assistant for Marketing, who served as symposium coordinator, and Dr. Gary H. Glaser.



NEWLY ASSIGNED Air Force officers for the EWI program are, left to right, Captains Vannier, Woodcock, and Hollenshead.

FOR EWI PROGRAM

Air Force Officers Assigned

Three Air Force career officers have been assigned to the Aircraft Division under the Education-With-Industry program which is a joint effort of the Air Force Institute of Technology and leading government contractors, according to Jim Anthony, EWI coordinator.

Participating in the 10-month program will be Captains Lavon D. Vannier, Donald L. Woodcock, and Harold H. Hollenshead II.

In describing the EWI program, Mr. Anthony noted, "The program seeks to train the individual officer to interpret events and to make better decisions in a technological management and environment with the long range objectives aimed at a broad perspective of the government and industry relationship."

The three men will visit each of Northrop's major divisions in Southern California during their tour and many of the subsidiaries. Northrop has participated in the EWI program for the past 22 years.

Northrop Ventura To Exhibit Targets

Point Mugu's 14th annual Space Fair, Oct. 27-28 will again have a Northrop exhibit as one of its features as the Ventura Division will exhibit both aerial and underwater targets.

To be on display will be the new MQM-74C aerial target and the Mark 30 mobile underwater target.

Pt. Mugu is the headquarters of the Pacific Missile Range and is located just off the Pacific Coast Highway between Malibu and Oxnard.

This year's Space Fair will feature twice-a-day air shows headlined by the Army's Golden Knights parachute team. Nine of the best aerobatic pilots including Ken Brock in his gyrocopter; Bob Hoover, Carolyn Salisbury, Cliff Howard, Art Scholl, Mira Slovak, Gordon McCollom and the Red Knights will perform.

In addition, Formula I midget racers will race in the Quaker State Grand Prix and the half-mile long carnival midway will have games, rides and refreshments. There is no admission charge but contributions of $1 are accepted for grandstand seats. All proceeds go to the Navy Relief Society. Gates open at 9 a.m. and close at 5 p.m.

Simecka Elected AUSA President

Dr. W. B. Simecka, vice president, Technical and Marketing, Electro-Mechanical Division, has been elected president of the Greater Los Angeles Chapter of the Association of the U.S. Army. He succeeds Thomas R. Stuelpnagel of Hughes Helicopters.

The Association of the U. S. Army is a non-profit educational organization dedicated to working for a better Army and the well-being of Army people. The Greater Los Angeles Chapter is one of the largest and most active.

In addition to Dr. Simecka, other officers of the chapter are Felix J. Gerace, secretary, and board member William H. Habblett, both of the Northrop Corporate office.

The AUSA also sponsors an annual Family Fun Night at Disneyland which will be on Friday, Oct. 19, this year. Northrop personnel have been invited to join AUSA for the night. Tickets are available at Personnel Activities.

DR. W. B. SIMECKA, right, president of the Greater Los Angeles Chapter of the AUSA, with Thomas R. Stuelpnagel of Hughes Helicopters, past president.

NORAID Board of Control Selected at Annual Meeting

The board of directors of NORAID has selected its board of control at the annual meeting held Sept. 13 at Hawthorne. Sal Xifo was named chairman of the board and Willard Lindstrand will serve as president for the coming term.

Other officers selected were Lloyd Jones, vice president; Marie Tully, secretary; and Ernie L. Boren, treasurer. The board also decided to limit the number of directors to 10, and announced the following as directors: Corporate office, Jack Bruce; Aircraft Division, Mr. Xifo, Mr. Lindstrand, Dan O'Halloran, Paul Jacobs, Max Fayrweather, Paul Champion, and Chuck Benson; Electronics, Lloyd Jones; Electro-Mechanical, Doug Leavenworth.

Marie Tully was appointed NORAID administrator, Jo Roth, deputy administrator, and Rudy Rivero, accountant.

The treasurer's report indicated that total contributions received during 1973 put NORAID over the $1 million figure since its beginning 18 years ago.

Most noteworthy was the contribution campaign accomplished by the Huntsville, Ala., operation which netted a record $10,424 for the past year.

The treasurer concluded with the reporting of the bank balance for NORAID at $47,446.92 as of July 31, 1973.

NASA Presents Citation to NSI

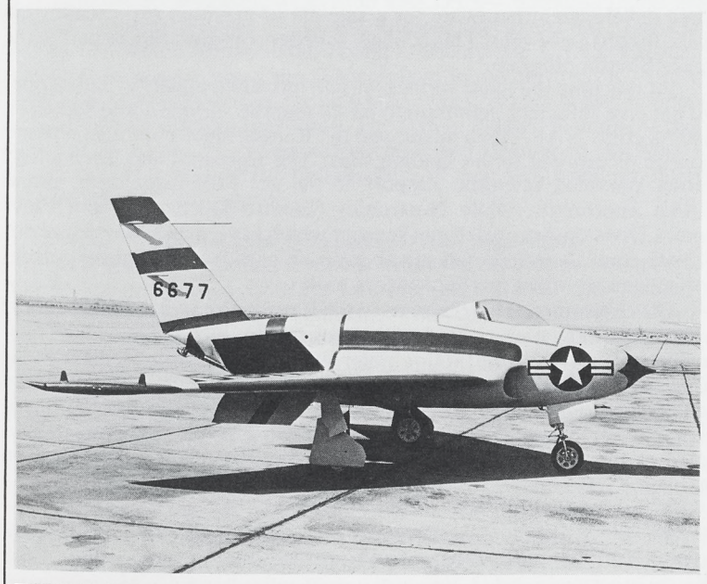
Northrop Services, Inc., teams in the Space Environmental Simulation Laboratory at NASA's Johnson Space Center received a Group Achievement Award in recognition of outstanding work in planning and accomplishing the Skylab Apollo Telescope Mount thermal-vacuum test program.

The successful tests assisted in assuring the flight readiness of this equipment, according to the citation which was signed by Dr. C. C. Kraft, JSC director.

The award was presented to J. C. McLane, Jr., chief, Space Environment Test Division, and C. E. "Pete" Gist, SESL Department manager.

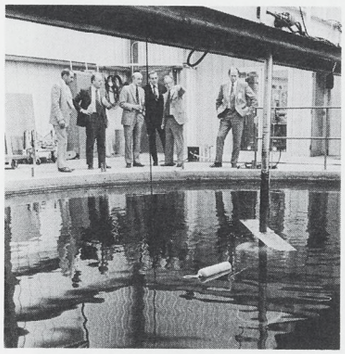
HAVING THE CORRECT TIME is essential to these Teletype operators at Hawthorne so they offer a reminder to all personnel by making sure the TWX room clocks all get moved back one hour for the end of Daylight Savings Time, Sunday, Oct. 28. From left to right, Julia Ancheta, Aircraft Division; Sharon Ferrante, Electronics Division; and Mary Jones, Aircraft Division.

Historically Speaking . . .

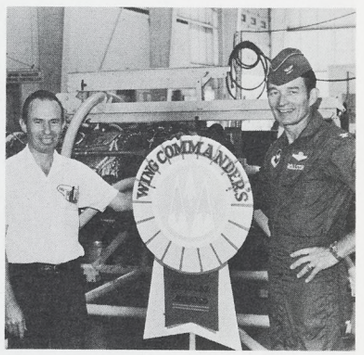


THE NORTHROP X-4 was built for Air Force NACA in 1948 as a miniature flying laboratory in the Research Airplane Program. It was intended to provide data on stability and control at speeds in excess of 600 mph. The wing surfaces were sweptback and the tail was only a vertical fin and rudder. There was no horizontal stabilizer with elevons on the trailing edge of the wing acting both as elevators and ailerons. It was in operation from 1948 to 1953.

Wingspan: Approximately 27 feet
Length: 23 feet
Gross Weight: 7,000 pounds
Maximum Speed: 625 mph
Ceiling: 40,000 feet
Engines: Two Westinghouse J-30 gas turbine engines with 1600 pounds of thrust each
Purpose: Experimental

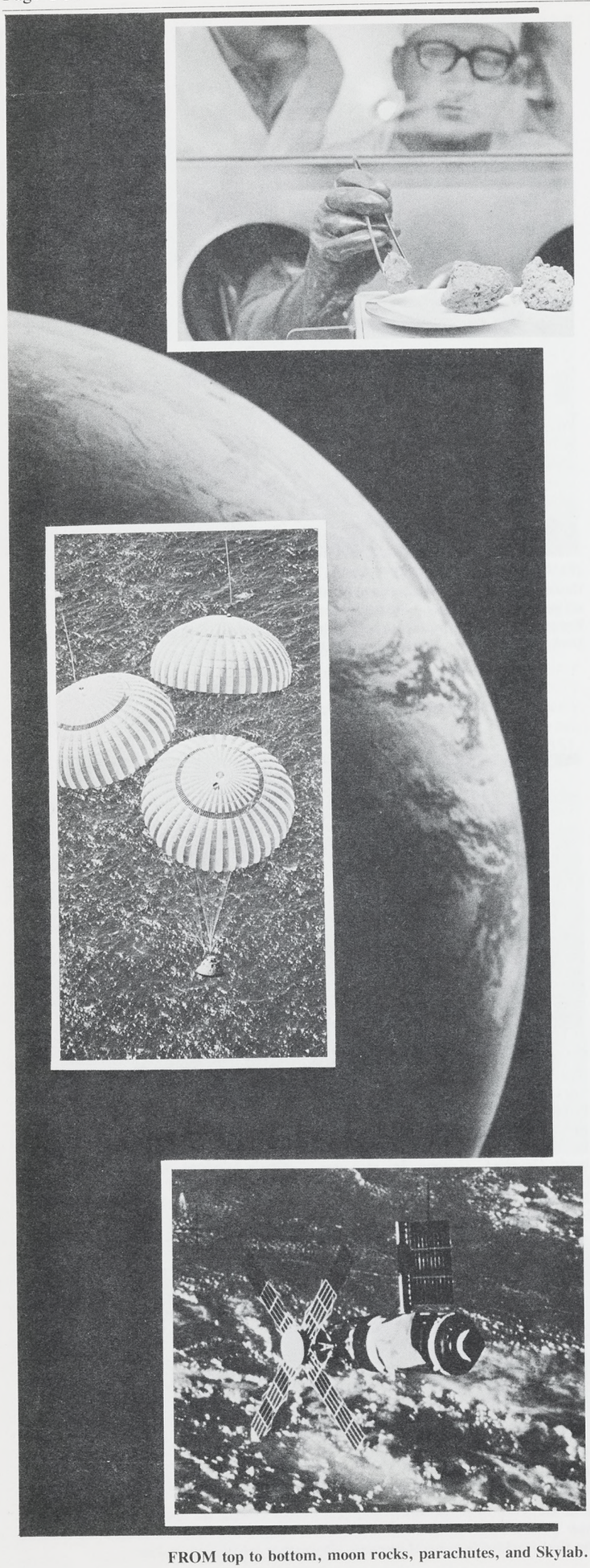


MARK 37C demonstration in test tank is observed by Royal Netherlands Navy visitors to Ventura Division. From left, Dave Maher, Mark 37C Program manager; Cdr. J. Van Schieveen, Rear Adm. H. Van Mastright, both of The Netherlands; George C. Grogan, Jr., vice president, Product Development; J.A. Rummell, and J.H. Hillinga, Netherlands agent for Northrop.



COLONEL JOHN P. Rollston, wing commander, 71st Flying Training Wing, Vance AFB, Okla., originated a Wing Commander's Special Award for presentation to organizations for sustained superior performance in support of the wing's missions. Colonel Rollston and Donald Klepfer of the Northrop Worldwide Base jet engine shop, first recipient, pose by the special award.

ONE OF THE displays which attracted people visiting the recent Northrop Dakota New Town Facility open house was the Northrop Electronics Division-built Omega, the first worldwide general purpose all-weather navigation system.



FROM top to bottom, moon rocks, parachutes, and Skylab.

NASA—No

Fifteen Years With the N

On Oct. 1, 1973, the National Aeronautics and Space Administration celebrated its 15th anniversary. In that decade-and-a-half NASA took the U. S. space program from failures, hopes and one small satellite in space to men-on-the-moon, Skylab and robot adventures in space.

For just two months short of these 15 years, Northrop has been a part of the NASA-industry team that helped turn Buck Rogers from a comic strip into a prophet. In December 1958, Northrop was one of several companies invited to submit proposals for Project Mercury.

The first actual contract however, was obtained by Northrop Ventura for the Mercury landing system. This initial contract was followed by others with the Aircraft Division, Northrop Research and Technology Center, Nortronics (now divided into the Electro-Mechanical and Electronics Divisions), Northrop Page Communications Engineers Inc., Northrop Services Inc., and Precision Products Department.

The Ventura Division, through its research and development work in the earth landing systems area, became the world leader in this specialized field. The division has had responsibility for the earth landing systems used for all NASA manned space launches with a perfect recovery reliability. The Apollo-Skylab system built by Ventura had four subsystems — parachutes, sequence controller, location aids and ground support equipment. Ventura also supplied the forward heat shield deployment mortar and parachute, considered as separate from the landing system.

Solving Scientific Problems

Both the Aircraft Division and the Research and Technology Center were deeply involved in solving scientific problems relating to space flight. Great ingenuity was necessary to solve many of these problems. In one case the Center built a five-story-high lunar gravity simulator. Human subjects were suspended on their sides to give the effect of the one-sixth gravity of the moon.

In the area of biology, NRTC participated in studies of the effect of space environment on non-human life forms. One program was to fabricate the behavioral panel for Biosatellite III which measured the performance of the monkey, Bonnie, during her nine-day space flight. And in cooperation with the Electronics Division, NRTC designed and fabricated development hardware for a satellite to maintain two monkeys in space for up to one year. This concept is under consideration as part of the Space Shuttle program.

At this time the lunar surface was an unknown quantity. Telescopes did not give sufficient definition to prove that the surface could support a landing craft. NASA then developed the Ranger lunar probes to provide closeup pictures of future landing sites. The Research and Technology Center provided scientific support to the Jet Propulsion Lab, prime NASA contractor, while Nortronics (Electro-Mechanical and Electronics Divisions) provided sun sensors which gave signals for spacecraft attitude controls from initial sun acquisition until the mid-course correction maneuver when inertial sensors took over.

Other Northrop contributions to the Ranger program included a short range earth sensor, activated to control roll by locking the directional antenna on earth. A Central Computer and Sequencer provided computations and sequencing for critical events such as the midcourse maneuver and terminal maneuver. Another Northrop contribution was the Squib Firing Assembly, which triggered the opening of the solar panels and acted as the ignition switch to start and stop the midcourse correction motor.

Group Achievement Award

These Nortronics contributions were supplemented by sensors and gyroscopes from the Precision Products Department, now a unit of the Electronics Division. Similar work was done for NASA's Mariner programs to explore interplanetary space with flybys of Mars and Venus. Northrop's work in support of development and execution of the Mariner mission to Mars in 1969 earned the company the coveted Group Achievement Award from NASA Headquarters.

Also provided by PPD for NASA programs were a variety of guidance instruments and packages. Included in these are the emergency detection system, a triple redundant gyro package, which constitutes an essential part of the crew safety equipment and launch mode. Another PPD contribution is the precision gas-bearing gyroscope which is currently providing control on Nimbus 5 and will soon provide control in a PPD-developed package for the orbiting solar observatory. Other guidance packages were made available for Apollo, earlier Nimbus vehicles

Northrop

The NASA-Industry Team

and the Standard Launch Vehicle. Many of the Apollo guidance systems utilized IRIG gyros, developed by PPD, in the navigational inertial measurement unit.

After completion of the preliminary Mercury and Gemini earth orbital flights, NASA moved into the Apollo program to place a man on the moon. While this tremendous achievement was under way, Northrop undertook a number of other important programs for NASA. Nortronics built a "Q-ball" attitude sensor for the X-15 rocket research plane. The Q-ball sensor was later used in the Saturn rocket as well. The Aircraft Division built first the HL-10 and then the M2-F-2 and M2-F3 lifting bodies to study the feasibility of reuseable re-entry vehicles. Ventura, under NASA contract, developed the Parawing, a steerable gliding parachute.

At Cape Kennedy

At Cape Kennedy the Electronics Division installed its Vigicon display system in the new range control center to provide real-time screening of launch and range data. Northrop Page Communications Inc., contributed a frequency analysis facility on Merritt Island, down-range UHF ground-to-air stations, and troposcatter facilities at key locations in the Caribbean. Page-designed UHF ground stations have the capability to provide voice communications with spacecraft during launch and earth orbiting phases.

In addition to other work, Northrop — first in association with Brown & Root and then through its subsidiary, Northrop Services, Inc., assumed important technical support for NASA at the Goddard Space Flight Center, Marshall Space Flight Center, Langley Research Center, Johnson Space Center, Ames Research Laboratory as well as at the Jet Propulsion Laboratory in Pasadena and at Edwards Air Force Base.

This support took many widely diversified forms as NASA's Apollo program moved toward the climax of putting a man on the moon. Precision Products Department's accelerometers were aboard the Saturn booster. NSI-Huntsville provided real-time trajectory analysis support.

The Electro-Mechanical Division's ALOTS — Airborne Lightweight Optical Tracking System — visually tracked the spacecraft. The Electronics Division's Marine Star Tracker, aboard the USNS Vanguard, was vital in helping place the spacecraft in initial earth orbit. And the Vigicon data display system provided the clarity, accuracy and completeness needed to program the flights. Then when the first men on the moon returned to earth, Northrop technicians had developed portable instrumentation to provide the first readouts of their health and physiological condition during reentry.

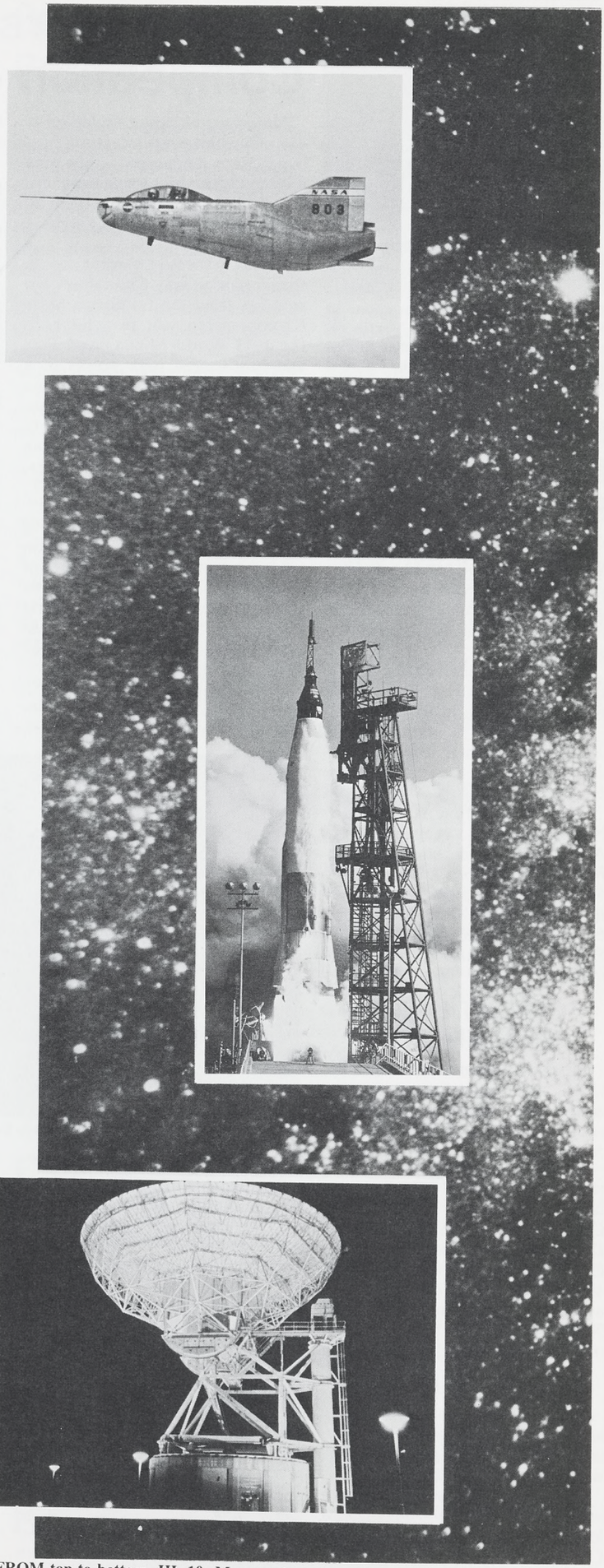
Technicians Quarantined With Astronauts

At this time no one knew what microbes might exist in the lunar soil. The Lunar Receiving Lab at the Johnson Space Center was manned by Northrop Services, Inc., technicians who were quarantined with the astronauts. Among the services provided was a non-denominational religious service conducted by a Northrop employee in the quarantine area. Employed as a cook for the astronauts, the employee happened to be a lay preacher in a Houston, Tex., Baptist church. A Northrop technician was also the first person on earth to handle the moon rocks.

Northrop support continued through the entire Apollo program, and was on hand to help with emergencies. In 1970, 47 company employees were cited in a Medal of Freedom certificate which President Nixon presented to the NASA Missions Operations Team for work when the carbon dioxide removal capability of Apollo 13 became marginal in space. Northrop employees in the Crew Systems Laboratory worked with NASA personnel to develop a solution on earth, transmitting this information to the astronauts.

With completion of the Apollo program and the beginning of Skylab, Northrop continues its role as an important member of the NASA-Industry support team. Northrop Services, Inc., continues its support at Huntsville, Ames, Goddard and Houston. Northrop Ventura's parachutes, which have returned every astronaut who has gone to space, are doing the same job with Skylab. Other contributions to Skylab have been made by both the Northrop Research and Technology Laboratory and the Electronics Division.

(See NASA ANNIVERSARY, page 7)



FROM top to bottom, HL-10, Mercury launch and troposcatter.

JADDIS MARTIN answers phone at Northrop Hueneme. Mrs. Martin recently was awarded her Certified Professional Secretary rating by the National Secretaries Association.

NSA Awards CPS Rating to Northrop Hueneme Secretary

Northrop Hueneme's Jaddis Martin said it took her 10 years but she has finally received her Certified Professional Secretary rating from the National Secretaries Association.

Mrs. Martin received her certificate at the recent regional meeting of the association in Riverside.

She presently is administrative secretary to John R. Flores, managing director of Northrop Hueneme.

Mrs. Martin first started with Northrop some 11 years ago at the Aircraft Division, later transferring to the Ventura Division.

A very active person, Mrs. Martin has been one of the top women competitors in the Ventura Division's regular golf tournaments.

CREDIT UNION STATEMENTS

Northrop Hawthorne Credit Union statements of accounts were distributed recently along with auditor's account verification records.

Members who did not receive their statements are asked to contact Raum-Heffner Accountancy Corporation, 1499 Huntington Drive, Suite 309, South Pasadena, Calif. 91030. Queries should include the member's name, address, account number and mention of Northrop Credit Union, Hawthorne.

NRC SKI CLUB

With Halloween approaching and frost is on the pumpkin, it can only mean one thing — the snow will soon start flying.

All snow bunnies, advanced or intermediate skiers will be happy to know that the Northrop Recreation Club is in the process of activating the Ski Club again.

Shon Andersen Outrides Competition on a Honda

Nine-year-old Shon Andersen — son of Northrop Architectural Systems' Zern Andersen — has nine mini-cycle trophies for each year of his life — 81. He has won them all in the past two years, riding a Honda XR75.

Riding in the 9-11 expert class, in these two years, Shon has two trophies from the California State Championship, won two classes in the 1973 World Mini Grand Prix and has scored high points at a number of racetracks in California and Arizona. He is presently state leader in points for 1973 in the 11 and under expert class at Trojan Speedway. An all-around rider, Shon competes in scrambles, TT, flat track and motocross.

Despite his championship form now, his father reports that Shon was originally shy and was not doing well in school. Then on his sixth Christmas Shon got his first mini-cycle. Six months later, just after he turned seven, he competed in his first race.

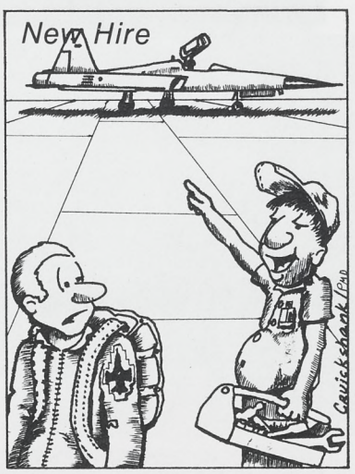
"The change the bike made in him was amazing," Zern said. "He lost his shyness, his school work improved wonderfully, and he came out of his shell."

It also made quite a change in his family's life as well. "Everything we do is built around Shon's racing now," Zern said. "We're at a track somewhere every weekend. We go to such places as Blythe, and Parker and Phoenix, Ariz., as well as all around Southern California. In November we'll be heading for Florida and the Winter Nationals."

Shon's many wins has brought him a full sponsorship of a La Puente cycle company and he rides with the Hacienda Heights Honda team with four other riders, Joey Hamilton, Mike Lewis, Bill Jewett and Rene Payne, a girl. The five riders will compete as a team in the coming Winter Nationals in Florida.

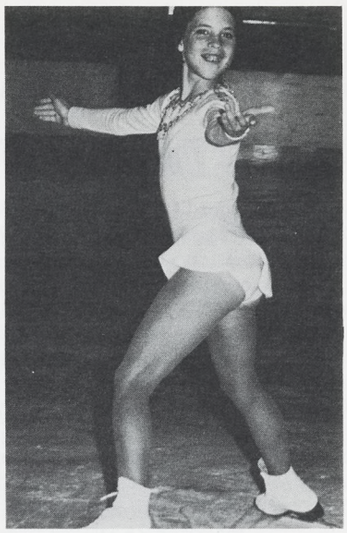
While Shon is outriding all competition right now, he may not have it so easy in the future. His six-year-old sister, Dawn, has herself an Indian Peewee bike and has already captured five trophies on her way to catching up with her brother.

SHON ANDERSEN in his championship form on his way to winning another trophy.



Sir . . . How many passengers does that thing carry?

GOOFY WELCOMES a young Disneyland visitor and his father to the park, just as he will be on hand to welcome Northrop employees attending Family Fun Night this Friday, from 8 p.m. until 1 a.m., as guests of the Association of the U.S. Army. Pick up tickets at Personnel Activities, Aircraft Division.



CARRIE RUGH

Carrie Rugh Is Happy on the Ice

Pretty Carrie Rugh, 11-year-old daughter of Walt C. Rugh, Configuration Development and Integration group, Aircraft Division, has begun to reap the rewards of hard work towards achieving her goal of being a champion ice skater.

In September, Carrie placed first in the Bronze Ladies Division at the Golden West Free Skating Championships in Culver City and has now set her sights on the November competition of the Southwest Pacific Championships in Paramount.

"Carrie has been skating for four years," Walt Rugh explained. "What really got her interested in it was when we were at a local shopping center and happened to see an exhibition put on by a four-member skating family. Carrie was completely captivated by this one little girl about the same age as she, and decided right then that was what she wanted to do in life," Walt said.

The Rughs are quick to point out that Carrie's health and school work come first. She is up by 4:30 a.m. on practice days and is on the ice at the Ice Capades Chalet in Santa Monica by 5:45 a.m. for an hour of figure skating and an hour of free style.

By 8:30 a.m. she is in class and after school, is either in her ballet class or back to the ice rink and more practice.

Carrie manages to complete her homework and be ready for bed by 7:30 p.m.

As far as relaxation goes, Carrie is never more relaxed than when she is in her skates and on the ice.

Last year, Carrie finished fifth in the Southwest Pacific Championships but is aiming for the top spot which would qualify her for the Pacific Coast Championships slated for January 1974 at Portland, Ore.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Pickup, 1969 F250 Ford & 8' cabover camper, 33,000 act. mi., $2900. 213-866-8774.

Plymouth, 1971 Sport Suburban wagon, fact. air, p/b, p/s, $2675. 213-374-5737.

Motorcycle, 1971 Honda CB 350, $500. 213-754-6146.

Datsun 1600, 1969 roadster, new brakes & clutch, $1250. 213-542-4220.

Chevrolet, 1965 Impala SS, 283 eng., auto., p/s, p/b, $500. 213-973-4499.

Pickup, 1954 Ford, 390 eng., $500. 213-323-9586.

Motorcycle, 1973 Z50K4 mini-trail Honda, $235. 213-370-7779.

Olds, 1966 sedan, air, full power, $600. 213-377-1992.

Motorcycle, 74" Harley, 1960 eng., straight leg rigid frame, $1800. 213-671-8890.

Motorcycle, 1969 Honda, 90cc, $85. 213-291-0025.

El Camino, 1968, fibreglass shell, 62,000 mi., $1750. 213-781-8187.

Motor Home, 1970 Winnebago, 27', s/c, Dodge chassis, roof air, gen., $7500. 213-378-1026.

Pickup, 1960 ½-ton Ford, $550. 213-324-3625.

Chevrolet, 1961 station wagon, p/s, $120. 213-675-8262.

Ford, 1968 4-dr. LTD Brm., a/c, $1225. 213-545-1672.

Motorcycle, 1966 Honda S-90, rigged for dirt, $95. 213-831-6567.

Motorcycle, 1967 Honda Scrambler 305, $250. 213-676-5787.

Monte Carlo, 1973 Landau, all options, $4595. 213-370-0824.

Pontiac, 1968 Firebird 400, auto., full power, air, 62,000 mi., $1200. 213-886-4133.

Dodge Van, 1971, 1-ton, V-8 318, air, AM/FM, p/s, $3195. 213-373-3951.

Volkswagen, 1967, 62,000 mi., wide pos-i-traction tires, Hurst shifter, tach, Headman Headers, 1500cc eng., $1000. 213-835-1300.

Volkswagen, 1967, $700. 213-370-9037.

Chevrolet, 1954 wagon, 12-volt, $65. 213-374-2524.

GTO, 1967, AM-FM stereo, auto., a/c, p/s, p/b, new tires & batt., $1100. 213-675-4774.

Lincoln, 1962 Continental, fact. air, p/s, p/b, $145. 213-679-1637.

Buick, 1968 Le Sabre, $850. 213-596-5166.

Pinto, 1972, 4-spd., 2000 cc eng., a/c, AM-FM radio, $2200. 213-821-5516.

Motorcycle, 1973 Honda CL350, 6 mos. old, $675. 213-645-4697.

Oldsmobile, 1973 Cutlass Supreme, V-8 h/top, p/b, p/s, Turbohydra. 350, 4020 mi., $3495. 213-371-8867.

Ford 1965 Supervan, 12,000 mi. on reblt. eng., 6 cyl., 3-spd. stick, new brakes, shocks, master cyl., $1000. 213-327-6644.

Plymouth, 1969 Fury III, p/s, p/b, auto. trans., a/c, r/h, $1300. 213-342-7337.

Van, 1972 Ford, 6000 mi., E200 lg. wheelbase, 351 V-8, $3000. 213-322-6655.

Datsun, 1972 240Z, a/c, 25,000 mi., $4300. 213-545-3128.

Miscellaneous For Sale

Speed Boat, in-board Buick eng., trailer, $1500. 213-324-1735.

Bedroom Set, 5-pc. hard rock maple, dble., box springs, mattress, $150. 213-379-7488.

Aquarium, 26-gal. & 15 gal., stands, all access., $85. 213-638-6457.

Maintenance Manual, 1972 Pontiac Grand Prix, $7. 213-377-7670.

Shag Rug, 6', round, red/black, $25. 213-545-3495.

Tires, 4 1973 Datsun pickup, std. 6.00 x 14-6 ply, rims & full hubcaps, less than 3,000 mi., $80. 213-323-7171.

Wheels, 2 7.50 x 16 split rim, & tires for Ford 8-lug, $20 ea. 213-833-7903.

Boat, 12' Mini-Sport, dble. fiberglass hull, 20 h.p. Chrysler, less than 50 hrs. on motor, trailer, $895. 213-823-6238.

Wheelbarrow, hvy. duty construction-type, $20. 213-395-4801.

Roof Rack, lge., cover, $15. 213-375-8536.

Record Player, Magnavox portable stereophonic, 4 spkrs. in 2 cabinets, $40. 213-376-2190.

Sewing Machine, Singer, walnut cabinet & carrying case, 2 yrs. old, $50. 213-675-0116.

Miscellaneous For Sale

TV, 9" b&w Sony solid state, $25. 213-931-9360.

Stereo Cabinet, 6' Mediterranean, w/record player, wet bar, $200. 213-676-6187.

Golf Bag, men's, $10. 213-379-4517.

Dog, female, Great Dane, fawn, champ. stock, $200. 213-675-7477.

Water Bed, queen size, mattress, safety liner, angle frame, padded h/board, $85. 213-379-0447.

Stove, coppertone, dble. oven, elec., $125. 213-644-3427.

Scuba Diving Tank, U.S. diver's alum. aqua-lung tank w/J valve, 71.2 cu. ft. air cap., used once, $80. 213-676-3087.

Sewing Machine, Kenmore, cabinet model, all attachs., $50. 213-675-1512.

Lace Gown, Sophisticated Miss black ribbon, size 8, never worn, $50. 213-789-6305.

Lawnmower, power, reel & rotary, $15. 213-294-0727.

Television Consolet, RCA UHF & VHF, color, $125. 213-944-3794.

Electro-Magnets, 2 sets, 6 v., for trailer brakes, $20 set. 213-679-6982.

Coffee Table, w/2 lamp tables, glass top, bleached mahogany w/mahogany bark legs, $125. 213-644-3922.

Bedroom Set, canopy bed, box spring, mattress, dresser w/mirror & night stand, $125. 213-370-8932.

Broiler/toaster oven, Black Angus Petite, used twice, $10. 213-430-8378.

Refrigerator, Frigidaire, apt. size, $25. 213-530-0501.

Hi-Chair, $5. 213-376-4831.

Dog, Irish setter, papers, 1 yr. old, all shots, $75. 213-830-0294.

Golf Set, 1 & 3 woods w/head covers, 3, 5, 7, 9 irons & putter, bag & collapsible golf cart, $65. 213-923-9957.

Coffee Table w/end tables, never-mar top, wrought iron legs, $15. 714-838-7161.

Folders, 150 Sams Foto Facts, I-908w/cabinets, turntable repair rack, lab. oscilloscope, other access., $200 or sell separately. 213-863-3900.

Camper, 10½' cabover, 2 queen size beds, other extras, $650. 213-360-0386.

Couch, w/chair, naugahyde, $25. 213-328-3306.

Tire & rim, tubeless for VW bus, 7.35x14, $10. 213-323-5007.

Tires, 4 H78-15 8-ply, 8:15-15 8-ply, E78-14 belt, 7:35-14 4 ply, $4 ea. 213-346-6255.

Telescope, 900 mm, same as Sears, $45. 213-599-7009.

Book of Knowledge, 45-vol. set, for children, $25. 714-633-4656.

TV, G.E. b&w 16" portable w/earphone & stand, $30. 213-541-1913.

Calculator, pocket Royal Digital III, $25. 213-370-8365.

Pups, AKC, small miniature, papers, $50. 213-866-4104.

Trailer, 1969, 18' Prowler, self-contained, many extras, $2100. 213-370-9547.

Tape Recorder, Akai 40,000, just serviced, $225. 213-278-4555.

Dryer, gas, white, Norge, lge. cap., $45. 213-370-9451.

Typewriter, elec. SCM, 10" carriage, other features, $100. 805-495-7550.

Range, 36" gas 4 burner & griddle, 4 yrs. old, $150. 213-360-3710.

Utility Trailer, 6', 2-wheel, new tires & light wiring, $50. 213-831-9589.

Pup, Yorkies, AKC reg., ready by Thanksgiving, $250. 213-425-2528.

Luggage, men's Samsonite, grey, 4 pcs., $90. 213-375-5360.

Aircraft Radio, LNC-100 sys., 100-channel com. & 100-channel omni/loc & mkr. ben. complete w/power supply, $150. 714-532-1510.

Ping Pong Table, regulation size, $7. 213-675-7740.

Movie Camera, Kodak 8mm & Super 8 zoom lens & carrying case, $50. 714-833-2448.

TV, 21" RCA color, deluxe console, $50. 213-542-1084.

Bar Stools, 2 swivel, melon color, back supports, $30. 213-530-3521.

Camping Trailer, 1962 Krueger Travelaire Viking, 5'x8' trailer expands to 8'x10' alum. clad plywood cabin, sleeps 3, other extras, $150. 213-434-1795.

Refrigerator, small, 1 yr. old, $50. 213-677-4807.

Surfboard, 7' pintail, $75. 213-675-4306.

Ski Boots, Caber, ladies size 8, $30. 714-879-5356.

Refrigerator, Westinghouse, 17.5 cu. ft. frost-free, $80. 213-327-6918.

Sailboat, Newport Catamaran, 16', 7 sq. ft. more sail than Hobie, $850. 714-549-2001.

Bed, full size mattress, box spring, frame, h/board, never used, $60. 213-541-1700.

Wanted To Buy

Scout Group wants to buy repairable 10-spd. bicycles. 213-375-8460.

Wet suit, reasonable price. 213-973-5447.

Canoe Club Takes 'Fly Now, Paddle Later' River Outing

By Jan Agnew

Cruises to Mexico, flights to the Caribbean and tours of Europe run second only to the Northrop Canoe Club's fun-filled "Fly Now, Paddle Later" Labor Day outing on the Russian River. Really now, where else could you find a package holiday offer like this?

Fly PSA, round trip to Oakland, casually dressed in boots, jeans and sweat shirts. Upon arriving at Oakland Airport, a Hertz station wagon awaits to comfortably cram in the canoeists for a scenic 90-mile drive up Highway 101 to our destination — Asti, Calif.

Waiting

There, waiting in great anticipation, were two exhausted and blurry-eyed members of the club, Commissioner Chuck Pristas and Activities Chairman Brian Agnew, who had driven through heat and traffic, fingers crossed from gas station to gas station in the dark of night, to deliver safely, the bright yellow canoes, camping gear, food, band aides and mosquito repellent.

As the doors of the station wagon opened and we began to fall out, some members felt they might be permanently deformed, but, after a few minutes all were ready to tackle the rapids of the river. So, with paddles in hand, we're off on an exciting two-day excursion to be remembered for years to come.

Breathtaking Beauty

To adequately describe the perfect weather, clean, clear water, fresh air and breathtaking beauty of the river, which at times seemed to tunnel you into rich, green foliage and overhanging trees, would take every bit of this paper.

Upon leaving the third day, I believe it was agreed by all that this true beauty of nature, yet unspoiled by man's negligence, should be protected and cared for by us all.

Now back to work, a little sorry the trip is over, with a few blisters, a couple of bruises here and there, relaxed, and planning our next Canoe Club event, we say, "Try it . . . you'll like it."

Basic canoeing classes will start in the spring. Contact Commissioner Pristas, ext. 1142, Aircraft Division, for information.

NASA ANNIVERSARY

(Continued from Page 5)

The Northrop Research and Technology Center has been selected by NASA to prepare two experiments to be flown on the 1975 Apollo-Soyuz Test Project Mission. The two experiments to be conducted by the astronauts are to determine if complete mixing occurs when liquid lead and zinc are combined and when liquid aluminum and antimony are combined in a zero gravity field. Lead-zinc and aluminum-antimony compounds made on earth are not uniform mixtures because the densities of the elements are so different that they tend to separate due to the earth's gravitational field. If these compounds could be made, they would have important applications in the electronics industry.

And so the giant steps in space go on. As NASA celebrates its first 15 years in space, Northrop and its people can look back in gratification at their part in this tremendous achievement, and take pride in having been chosen to continue with Skylab as NASA takes another giant step into space.

Wanted To Buy

Trailer, good 2-wheel. 213-329-7447.

Cement Mixer w/without motor. 213-379-3134.

Flute & case in good condition for student. 213-645-1489.

Free (To Be Given Away)

Pups, 2 male, 5 wks. old, Labrador retriever. 213-675-1057.

Pups, Weimaraner/Labrador, black males. 213-322-3823.

Dog, 11 mos. old, male, great Dane/German shepherd, looking for good home w/big back yard. 213-374-0941.

Personals

Ride Wanted, Heil & Beach Blvd., Huntington Beach, 8 a.m.-4:45 p.m., Aircraft ext. 2254, 714-842-5713.

Skiers wanted for Utah Thanksgiving package, fly/ski, $160. 213-535-1577.

Ceramic Molds or kiln, wanted to buy or rent & use, owned by private party. 213-676-3050.

My family joins me in extending our most grateful thanks to the many friends at Northrop Ventura for the flowers & expressions of sympathy we received in regard to the passing of my beloved husband, Ralph Thenhaus. VIRGINIA THENHAUS & FAMILY.

I wish to thank all my friends for the plant, cards & calls during my stay in the hospital & at home. EILEEN SNYDER.

Personals

Thank you all for your concern, cards & donations for Ralph James. MRS. PAULINE JAMES & FAMILY.

Ride Wanted/offered, 8 a.m.-4:42, from Valencia Newhall area to Hawthorne, Aircraft ext. 1858. 805-259-6570.

We wish to thank all our friends & co-workers for the cards, flowers & expressions of sympathy during the illness & passing of our husband & father. LEONE & RHONDA ALLEN.

NORTHROP NEWS

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Division Couple Tired of Meeting In Hall, Marries

Two members of the Electronics Division found that meeting each other intermittently in the hallway wasn't quite conducive to a lasting relationship so what did they do — what else, but get married!

John Zubak, Transportation, and Jeannie Andrecht, contract estimator, exchanged vows Sunday, Sept. 30, at the Western Avenue Golf Course with nearly 60 division personnel in attendance.

John's best man was Bill McCann, Transportation and Shipping administrator, and the maid of honor was former division employee Margaret Weir.

Why a golf course for the ceremony? Jeannie explained, "John is an avid golfer and plays at Western regularly. I don't think any other place would have been quite as appropriate."

JOHN AND JEANNIE ZUBAK

The Zubaks, who reside in Inglewood, plan on a Christmas honeymoon on the NRC Christmas vacation tour to Mexico City and Acapulco.

AIDATS—Modification Begins

(Continued from page 1)

tion of initial operational test and evaluation conducted over a two-year period at the Edwards AFB Flight Test Facility.

Under the direction of Art Gandy, program manager, the following team has been assembled to implement the AIDATS program: Systems Engineering and Analysis — Burlie Cole, Bob Cooper, Al Garreffa, Don Hansen, George Kelly, Sam Lalande, Charles Lotspeich, Hermann Rittner, Steve Vavrek, and Chet Wetzel.

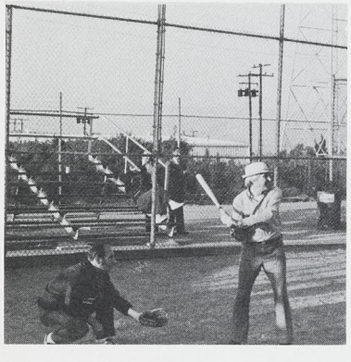
Laboratory Tests — Ron Brooks, Martha Chapman, Walt Davison, Stan Ecklund, Bill MacCorkell, Chris Saunders, and Don Schultz. Electrical Equipment Design — Paul Chey, Carlos Chong, Jay Crow, Dave Cumberland, Hugh Fletcher, Charles Fuller, Joe Gustin, Tom Leighton, John Overholser, Rudy Pineda, Phil Rosen, Al Taylor, Clarke Watkins, and Gene Yee.

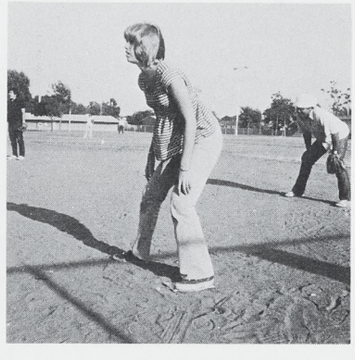
Mechanical Equipment Design — Al Edwards, John Groves, Al Lysik, Norio Mitsuoka, John Rufino, and Bill Sponsler.

Contract administration for the division was handled by John Kibbe, senior contracts administrator, and John F. Yaccarino, chief, Contracts Administration group. Financial planning control is being administered by Ken Fish.

The Army, in coordination with the Naval Air Systems Command, will have technical cognizance over the application of this data link system to meet service requirements.

AIDATS, by incorporating a network of ground stations with sensor and relay aircraft, will provide near real-time reconnaissance data for service commanders. This system utilizes an all-digital data link to reconstitute a hard copy image at the ground station within seconds of acquisition by the sensor aircraft. The result is a dramatic reduction in the amount of time required to react to changing tactical conditions.





FRIENDLY RIVALRIES were renewed recently when departments within the division staged their annual challenge softball play. In the opener, the Frankenbergs broke a two-year losing streak and downed the Caramellis, 13-8, and then fought to a 16-16 tie with the Janssens. At left, Don Mealy awaits pitch while catcher, Bill Fox, of Frankenbergs flashes out a sign. At right, Rosalind Rice, Caramellis squad, stands at first base while infielders Pete Casey, right, and Al Nakamura await possible double-play ball.

Seats Open for NRC Christmas Tour of Mexico

Only a few reservations remain for the NRC-sponsored Christmas tour of Mexico City, Tasco, and Acapulco which departs Dec. 22 and returns Jan. 1.

The tour price of $482.50 (including all taxes) includes transportation, first class accommodations in hotels, meals, sightseeing, and a New Year's Eve party.

Contact Personnel Activities or NRC Travel Club President Jeannie Zubak, ext. 542, for details.

Lion Country to Host Northrop Two Weekends

Employees and their families will have a chance to experience the beauty and excitement of a real African wildlife sanctuary when Lion Country Safari will host Northrop this weekend, Oct. 20, at special discount prices. Discount passes are still available through Personnel Activities for this weekend, and the weekend of Oct. 27, which has also been set aside at reduced prices by the Orange County preserve.

COMBUS

Combus reservations are still being accepted for the San Fernando Valley and San Gabriel Valley routes, 8 a.m. to 4:42 p.m. shift. Cost is $10 a week.

For information, contact bus captains Arthur Ohlemacher (San Gabriel Valley), ext. 2081 or 213-861-6404, Aircraft Division, or Don Biedermann (San Fernando Valley), ext. 4221 or 213-341-4438, Aircraft Division.

MOVIELAND OFFER

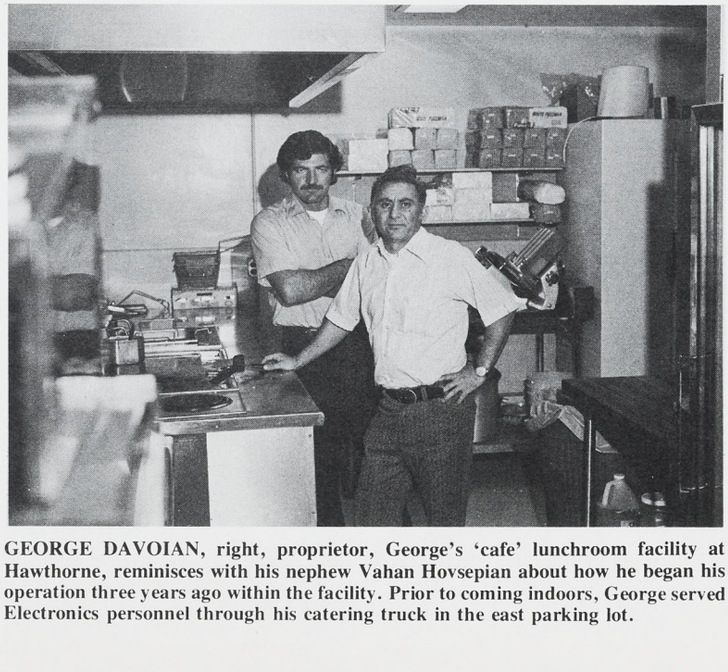
During the month of November, any Northrop employee presenting his badge at Movieland Wax Museum, Buena Park, will be entitled to one free admission for each admission of equal value purchased. In the event of two tickets of unequal value, such as one adult, one child, the child would be admitted free.

Safety Office Certifies 42 In First Aid

Forty-two Electronics Division members received certificates of completion in the First Aid course conducted by the Safety office during the past year according to J.J. Rahiya, Safety instructor.

"This shows a definite awareness by supervisors and all personnel within the division of the need for safety on the job and the need for trained first aid volunteers," Mr. Rahiya said.

The graduates of the courses were from the Palos Verdes, BSL (Torrance), Western Avenue Warehouse, Hawthorne and PPD (El Monte) facilities of the division.



GEORGE DAVOIAN, right, proprietor, George's 'cafe' lunchroom facility at Hawthorne, reminisces with his nephew Vahan Hovsepian about how he began his operation three years ago within the facility. Prior to coming indoors, George served Electronics personnel through his catering truck in the east parking lot.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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Action Committee Will Recognize EEO Participants

A campaign to recognize those individuals who have contributed the most to the success of the Affirmative Action Committee in achieving equal opportunity for minority and female personnel at Hawthorne has been announced by Pete Casey, committee chairman.

"We are seeking the help of all our people here at Hawthorne to give us the names of those individuals who they feel are worthy of recognition in the equal opportunity program," Mr. Casey said.

Qualifications

The committee will base its selection on the following qualifications: 1) Demonstrated that he or she has statistically improved minority and/or female posture through hires, transfers-in or upgrades. 2) Demonstrated thoughtful consideration of minority and/or female personnel by assisting those to achieve an upgrade; i.e., on-the-job training, transfers-out (either as a lateral move with possibilities of an upgrade, or an upgrade). 3) Demonstrated a sincere interest in minority and/or female progress within the corporation or the community.

A letter of commendation and plaque will be presented to the person or persons selected by the committee at its next meeting.

Use the form on page 8 to submit your recommendation to the Affirmative Action Committee.

DON AVALLON, left, congratulates Don Meyer for winning the Name the Omega System contest with his entry Cardinal. The two hold the logo which will identify the Cardinal I Omega Series hardware. Logo was designed by E. "Steinie" Steinmeyer, Proposals and Reports, Hawthorne.

NORTHROP DAKOTA President Roy Kaufold, right, congratulates Mary Conkling Elk, center, and Sherwin Raille, right center, after they received Employee Recognition Awards for outstanding job performance at the New Town facility. Looking on are Hal Janssen, left, Electronics Division manager, Division Relations and Services, and Jerry Howell, plant manager, Northrop Dakota.

Field Reps See Preview Of Fire Control Computer

Keeping Northrop competitive in the field of data link and communications systems was the theme of a two-day seminar held Oct. 30-31 at Palos Verdes for Corporate and Electronics Division field office representatives throughout the country.

Conducted by James F. Lynch and Robert Whitman of the Tactical Avionics Department, the seminar centered around the strategy and planning for future division programs in these highly competitive fields.

Following addresses by David N. Ferguson, Corporate vice president and general manager, and A. B. Lipscomb, manager, Tactical Avionics Department, the conferees participated in workshops and joint discussions. The final day's activities included the first showing of the TOP/20 computer to be used in the fire control system of the Lightweight Fighter being developed at the Aircraft Division.

Don Meyer Is Contest Winner

More than 260 entrees had to be narrowed down to a single winner during the recent Name the Omega System contest, and according to Don Avallon, manager, Navigation Department, who headed the seven man, one woman selection committee, "We really had a job on our hands!"

Mr. Avallon pointed out that there were several outstanding names submitted but the selection of Cardinal entered by Don Meyer, Special Projects Department, best suited the mission and function of the Omega system.

Mr. Meyer, a seven-year veteran of the division, came up with his winning entry during a single evening at his Mission Viejo residence and said, "My wife and two children already have plans for the $200 savings bond."

Ferguson Announces Additional Holiday

In keeping with changes in holiday practices by several local electronics firms, the Electronics Division has added a 12th floating holiday, according to David N. Ferguson, Corporate vice president and general manager.

This year the additional holiday will be observed Friday, Nov. 23, allowing division personnel a four-day weekend in observance of Thanksgiving.

In announcing the holiday, Mr. Ferguson said it has been made possible by the added efforts of all employees to resolve "the business problems we faced several months ago."

Division System Integral Part of T-43 Trainers

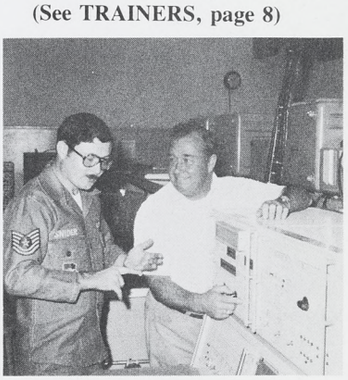
Undergraduate navigators at Mather AFB, Calif., are receiving the most up-to-date training the Air Training Command has to offer and among the training equipment being utilized is Northrop's Navigational Training System which is an integral part of the Air Force's T-43A jet aircraft built by Boeing.

The Northrop subsystem is composed of a 1060 digital computer, converter-storer central input/output unit, power distribution unit, and 12 navigator control/indicator panels. The Electronics Division will supply 20 subsystems for the T-43A program as well as serving as a spares depot for one year.

The T-43A (a military version of the 737-200 series of aircraft) is the airborne trainer portion of the USAF undergraduate training program and offers an easy transition to operational jet aircraft. It accommodates 12 non-rated navigators, and three instructors as well as having four navigator proficiency stations and five periscopic sextant installations. It requires only a pilot and copilot to fly it.

Field Service Representative John Brouhard, stationed at Mather AFB, reports an "enthusiastic response" from students as well as instructors over the arrival of the first T-43A's and their training equipment. John is assisting the ATC instructors in the maintenance and support functions of the Northrop subsystem.

(See TRAINERS, page 8)



FIELD Service Representative John Brouhard, right, listens as T/Sgt. Steve Snider, Air Training Command instructor, explains one of the test procedures in the navigational computer system test station at Mather AFB, Calif.

Wilcox Electric Receives $11 Million FAA Contract

Wilcox Electric, Inc., Kansas City, Mo., has been awarded an $11,505,975 contract by the Federal Aviation Administration for 101 new instrument landing systems (ILS). The systems, designated by the FAA as the Mark ID, are to be installed at airports throughout the United States, Alaska and the Virgin Islands.

Wilcox Electric is a subsidiary of Northrop.

The contract, which covers 84 full and 17 partial ILS systems, is the largest ever let for such equipment. It is also the first FAA award to call for complete, "turnkey" installations. Wilcox will carry out all engineering, site preparation, equipment installation, and preliminary flight inspection at sites yet to be determined.

The award represents the third major FAA ILS contract for Wilcox and maintains the company's current position as the agency's leading supplier of Category 1 instrument landing systems. Previous contracts, received in 1968 and 1970, amounted to $2 million and $4.7 million, respectively. To date, nearly 100 full or partial Wilcox ILS systems have been delivered for Federal installation at U.S. airports.

Wilcox has developed and manufactured navigation and communications equipment since the early 1940's and has delivered more than 1400 NAVAID systems throughout the world. These include non-directional beacons (NDB), VHF omnirange radio (VOR), distance measuring equipment (DME), as well as full and partial instrument landing systems (ILS). The company is the only U.S. firm currently offering a complete line of ground-based aircraft navigation and VHF communications equipment.

THE SYMBOLIC control stick is presented to Robert M. Elder, Corporate office, left, by James L. Brooks, outgoing president of the Society of Experimental Test Pilots during its October meeting in Los Angeles. Mr. Elder will serve as president during the coming year. (Photo by David Saldana)

Jackson Appointed Vice President, YF-17 Program

With its YF-17 lightweight fighter prototype program moving into the final assembly, flight test and evaluation phases, Northrop named Roy P. Jackson as vice president and program manager of the YF-17 program.

Mr. Jackson was recently named Corporate vice president for Program Management following his return to the company after three years with NASA as associate administrator for Aeronautics and Space Technology.

Mr. Jackson

Prior to joining NASA in late 1970, Mr. Jackson served as vice president and assistant general manager of both the Aircraft Division and the Northrop Space Laboratories.

Shortly before his return to Northrop, Mr. Jackson received NASA's highest award, the Distinguished Service Medal, for outstanding contributions to the United States' space exploration program.

In making the announcement, Welko E. Gasich, Corporate vice president and general manager of the Aircraft Division, said that final assembly of the first of two prototypes is now well under way and first flight is scheduled for the spring of 1974.

"Construction of the first YF-17 prototype is moving ahead rapidly," said Mr. Gasich. "Engineering drawings release is essentially complete and the fuselage of the number one aircraft is scheduled for removal from the assembly jig by mid-month. We will mate the already assembled wing sections to the fuselage by the end of this month," he added.

Mr. Gasich pointed out that, "Other major program milestones well under way include seat ejection testing at Holloman Air Force Base, N.M.; advanced design graphite composite materials installed in the fuselage and wing sections — the trailing edge flap, the fixed trailing edge and the aileron; and altitude testing of the General Electric YJ101 engine at Arnold Engineering Development Center, Tullahoma, Tenn."

W. E. Fellers, who managed the design and engineering phases of the YF-17, has been named chief designer of the Aircraft Division. Mr. Fellers will be responsible for the application of advanced fighter technology to such Northrop programs as the P-530 Cobra, the P-630 Navy Strike fighter and the F-5E and F-5F International Fighter programs as well as the YF-17.

Mr. Jackson received his A.B. degree in mechanical engineering from Stanford University in 1941, and following graduation, spent five years with the National Advisory Committee for Aeronautics at the Ames Aeronautical Laboratory both as a civilian and as a member of the U.S. Navy.

Society of Experimental Test Pilots Installs Elder

Robert M. Elder, assistant to the president, Aeronautical Systems, Corporate office, has been installed as president of the Society of Experimental Test Pilots during its meeting held Oct. 17 in Los Angeles.

Mr. Elder is an associate fellow and has been a member of the society for 15 years. He has previously served as chairman of the East Coast Section, vice president of the society and chairman of several major committees.

Considered as one of the nation's outstanding test pilots, Mr. Elder joined Northrop upon his retirement from the United States Navy in 1964.

During his 25-year military career, Captain Elder was director of Flight Test for the United States Navy, commanded two Navy fighter squadrons, an Air Group, and the 62,000-ton attack carrier USS Coral Sea.

He was twice awarded the Navy Cross and Distinguished Flying Cross for actions during the Battle of Midway and Guadalcanal campaigns of World War II. Captain Elder is also a veteran of the Korean War.

Among the 136 various aircraft types flown by Mr. Elder are test pilot "firsts" which included shipboard qualification of the Grumman XF7F and XF8F Bearcat, P-51D Mustang, the F4H-1 Phantom II and the A3J Vigilante; qualification of the P-38, 39, 47 and 61 WWII fighters for shipboard catapult launchings, and test programs with the French Mirage II and III, Entendar IVM, the Alize, British Hawker series jet fighters, Italian G-91 and Swedish SAAB series.

WEEKS SPEAKS

Stan Weeks, manager, Production Flight Facility, Palmdale, spoke before the Antelope Valley Board of Realtors last month. He discussed "Northrop Yesterday, Today and Tomorrow" with emphasis on Northrop activities in the Antelope Valley.

Northrop Reports Increase in Sales

For the nine months ending Sept. 30, 1973, Northrop reported net sales of $467,128,000 compared with $414,448,000 for the first nine months of 1972.

Net earnings for the first nine months of 1973 totaled $6,408,000 compared with $7,927,000 for the same period of 1972. This was equivalent to $1.59 per primary share versus $1.79 for the first nine months of 1972. Fully diluted earnings were $1.41 as compared with $1.57 a year ago.

Northrop's order backlog at the nine month mark was $950,924,000, setting a new company record. The backlog at six months of 1973 was the previous high in the company's history. The backlog at Sept. 30, 1973 compares with $734,800,000 on the same date a year ago.

Net sales for the three months ending Sept. 30, 1973, third quarter, were $179,454,000 compared with $146,822,000 for the same quarter last year.

The average number of common shares outstanding during the third quarter of 1973 was 3,825,093 as compared with 4,239,210 in the same period last year.

Olson Labs Conducts Airport Impact Study

In 1909 Lieutenant Benjamin D. Foulois, flying the only airplane owned by the U.S. Army, cracked up while using the parade ground at Ft. Sam Houston, Tex., as a landing field.

Foulois repaired his Wright B Flyer, but the outraged post commander refused permission for any more flights of that "dangerous box kite" on his base. Foulois had to hire a team of mules at his own expense to pull the plane off post so he could use a public road to get back to Ft. Myer, Va.

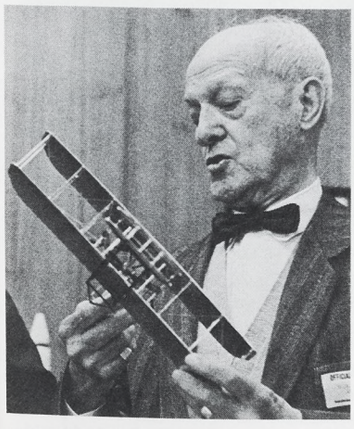
This is the first documented complaint about an airport. Today airports have come full cycle and citizens, as irritated by planes as the former commander of Ft. Sam, are demanding that officials do something about airports in their areas. Complaints and lawsuits are flooding airport directors, government officials and the courts.

Today's airport problem came about because landing fields "just grew." They initially were unplanned and laid out wherever there was vacant space. Now advancing civic "progress" has closed in around them and massive environmental problems have resulted.

Something New

This problem is now under investigation by something entirely new in the aviation world. It is the Environmental Impact Study. The National Environmental Policy Act of 1970 was passed by Congress to insure that airports and other major projects will no longer "just grow." Before any new airport can be constructed or any currently operated airport improved, a serious and detailed environmental impact study must be made.

These studies are made by independent research organizations for individual airport authorities and the final reports are reviewed critically by the Environmental Protection Agency as well as state and local agencies to insure full compliance with the requirements of the National Environmental Policy Act of 1970.



THE LATE Benjamin D. Foulois shows a model of the Wright B Flyer that caused the first airport complaint in 1909.

OLSON LABS cites the study being conducted at the Los Angeles International Airport as the biggest and most comprehensive ever made for an airport.

Olson Laboratories, Inc., a Northrop subsidiary, is a national leader in conducting these impact studies. R. L. Gibney, Olson president, in explaining how impact studies benefit both the public and the entire aviation industry, said that such studies do not tell airport authorities what they must or must not do.

"Rather they take a proposed action and determine its effect, both good and bad. This report can then be used by the airport authorities and the Environmental Protection Agency as well as other jurisdictions as a guide in final approval or disapproval of the proposed work," he said.

"Our impact studies are under the direction of Henry W. Wedaa, a pioneer in environmental sciences who has conducted similar studies for us at locations from Texas to California," Mr. Gibney said. "He is assisted not only by Olson's technical and scientific staff but also by 18 different consultant groups from both universities and major companies. In addition our program calls for consultation with 13 different federal, state and city government groups."

The list of items to be covered in the Los Angeles study indicates the wide scope of the investigation:

- **Environmental Factors,** including air pollution, noise studies, liquid and solid waste disposal, and possible fresh water contamination.
- **Ecological Factors,** including flora and fauna studies to ascertain effect upon wildlife and natural growth.
- **Transportation Systems.** This discipline surveys the adequacy of present transportation systems to serve the airport.
- **Economic Impact,** as it affects both the community and the local economy in terms of both benefits and costs.
- **Urban Development Studies** to show the urban effects of airport development.
- **Social Impact Studies** for the social effect on the community.
- **Geological and Seismic Studies** in general.
- **Visual Pollution,** including landscaping and aesthetic value.
- **Natural Resources Study.**
- **Safety Studies.** Effect of possible accidents.
- **Displaced Persons Study.** The effect upon persons who might be forced to move.
- **Park and Recreation Facility Study,** to determine if development will destroy or make untenable park areas.
- **Historical Landmarks.** A study to insure that no damage will be done to historical or archeological sites.
- **Community Participation Studies.** Open meetings are held so that affected citizens can make suggestions, objections, and become an integral part of the total impact study.

These airport impact studies go beyond just recording what will happen if a proposed action is taken. It considers alternatives as well. In the case of the Los Angeles study this includes such alternatives as contrasting growth at current levels or permitting it to grow to 40 million annual passengers and level off at that point.

The basis of these reports, Mr. Gibney pointed out, is "leg work." Olson investigators will be found with noise meters in their hands, checking playgrounds of local schools as planes fly over. They knock on doors to interview people living in the flight paths of planes. They talk with civic officials and businessmen whose industries depend upon continued development of rapid transportation. They dig into local history to insure they will not disturb some forgotten historical site. And, among hundreds of other duties, they also attempt to correlate natural sources of pollution with those that might arise from the airport development.

This last item leads to some surprising conclusions. For example, the National Environmental Protection Agency recently reported that cows burp 50 million tons of hydrocarbons into the air each year and that "no technology exists to control these emissions." In the same vein, a university investigator found that one pine tree gives off more hydrocarbons than one airplane. (This is due to turpentine evaporation from the tree's sap.) Such peculiarities of nature are not frivolous to Olson investigators. Local natural pollution must be taken into account, where appropriate, along with all other factors, to insure that even small amounts of man-made pollution do not over-balance the total pollution picture.

"The basic purpose of the Airport Environmental Impact Study requirement is to give airport managers, local, state and federal authorities enough information upon which to base decisions," Mr. Gibney said. "However, there is more involved than that. Everyone connected with the aviation and aerospace industries, every user of planes, has an enormous stake in the future of airports, and is affected by the undesirable environmental and ecological effects of uncontrolled airport development. The Airport Environmental Impact program is a new and effective tool to insure that airports will fit in with, rather than fight a community and that communities will not, like the post commander at Ft. Sam Houston in 1909, tell pilots to 'take your box kites somewhere else'."

R. L. GIBNEY, president of Olson Laboratories, discusses current airport environmental impact studies with Henry Wedaa, left, manager of the studies and Gordon Bricken, right, who is responsible for the noise portions of the studies.

Morris Family Attends Dedication Ceremonies

When Northrop field representative Jim Morris died in May of this year while assigned to Williams Air Force Base, Ariz., he not only left his wife Mae and their seven children, but also a host of friends and admirers among the 425th Tactical Fighter Training Squadron which flies the F-5E.

To show their respect and admiration for Jim, the men of the 425th dedicated their new pilots' lounge in his memory in ceremonies attended by Mrs. Morris and their seven children.

"Big Jim's" was dedicated on Oct. 13, in conjunction with an open house at Williams AFB, and honored the fine work Jim had done with the 425th and for the outstanding person that he was.

Lt. Col. G. C. Forstner, squadron commander, presented Jim's oldest son, Barney, with the engraved nameplate which the latter placed over the door to the lounge. Later a painting of Jim was also placed in the lounge.

Aircraft Division personnel on hand for the ceremony included John McCoy, Dave Deering, Don Crane, W. F. Woolfolk, Terry Matter, Bill White and Ervin Teare.

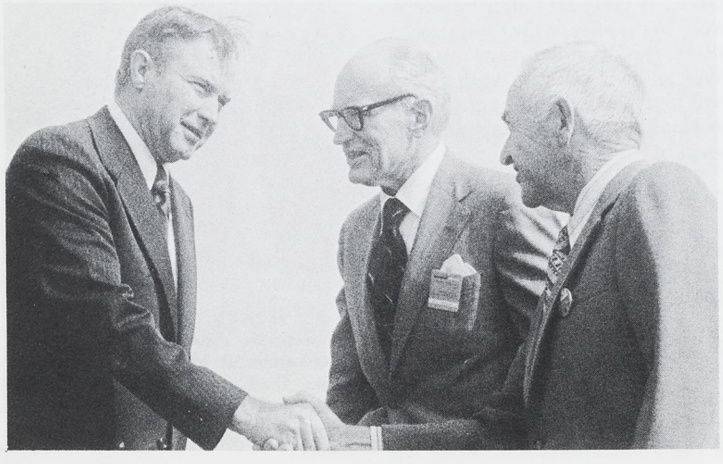
The Aircraft Division also donated a mural-size oil painting of the F-5E for the ready room at the 425th.

Jim joined Northrop in 1953 and had served as a tech rep on the F-89 program, an instructor at the T-38 Factory Training School in Amarillo, Tex., senior tech rep on the Nortronics Star Tracking System for the Polaris Submarine program in Massachusetts, TCTO writer for the T-38, senior tech rep on the T-38 at Laredo and Reese Air Force Bases, and then his last position as Northrop management representative at Williams AFB.

LT. COL. G. C. FORSTNER, squadron commander, 425th TFTS, presents engraved nameplate to Barney Morris, son of Jim Morris, Aircraft Division field representative, who died in May of this year. Barney placed the nameplate over the door to the lounge.

JERRY D. HOWELL, right, plant manager, Northrop Dakota, explains a quality assurance inspection procedure to Governor and Mrs. Arthur Link, D-North Dakota, during their recent visit to the New Town facility.

DISTINGUISHED VISITOR, below, the Honorable Robert D. Nesen, assistant secretary for the Navy for Financial Management, left, is greeted during his visit to the Ventura Division by W. E. Woolwine, Corporate vice president and general manager, center, and George F. Douglas, Corporate vice president, Administration. Sec. Nesen and his party were briefed on division's Navy programs and later toured the Mark 30 and MQM-74 areas.



MEMBERS OF Jim Morris' family pose in front of F-5E mural donated by the Aircraft Division to the 425th Tactical Fighter Training Sqdn. at Williams AFB. From left are Colleen Stalcup, Jerry McConnell, Mae Morris, Janet (Morris) Geiger, Brenda, Donna, Barney and Keith Morris.

NASA Honors Dana, McTigue With Medals

Veteran NASA test pilot William H. Dana and engineer John G. McTigue were honored with the NASA Exceptional Service Medals at ceremonies in Washington, D.C. last month.

Test pilot Dana was presented the medal for "exceptional service as project pilot on the HL-10 and M2-F3 lifting body flight test program which will contribute to the successful development and test of future space shuttlecraft."

He flew 28 flights in the experimental lifting bodies in a program designed to demonstrate man's ability to safely control and maneuver a vehicle with a shape primarily designed for space flight. He made both the first flight and the first powered flight in the M2-F3 lifting body.

Mr. McTigue was presented the Exceptional Service Medal for "cost reduction achievements in low-cost experimental shop concepts in the fabrication of lifting bodies flown at the NASA Flight Research Center."

Mr. McTigue worked with Northrop in the development and fabrication process of the experimental craft, with the result that the cost of both lifting bodies was kept to a total of about $1.2 million, well below usual development costs of contemporary research aircraft.

The presentations were made at the annual NASA Awards Ceremony.

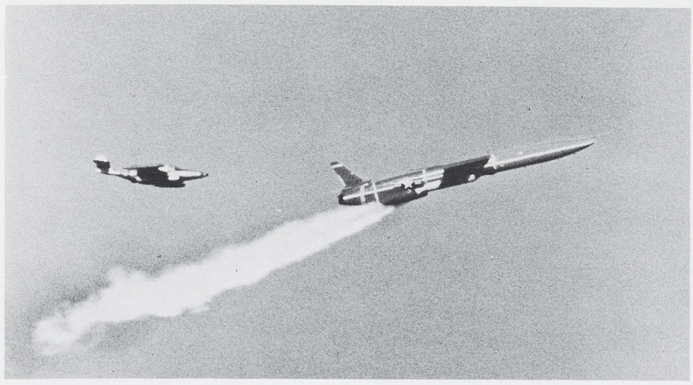
GRAHAM ELECTED

Willard M. Graham, Corporate Patent director, has been elected chairman of the Patent Committee of the Aerospace Industries Association.

The Patent Committee, whose members are corporate senior patent counsels of AIA member companies, is concerned with inventions, patents, copyrights and proprietary rights in data or information.

LESTER GROHE, president, Warnecke Electron Tubes, seated center, recently presented service awards to 10 employees who have completed 10 years' service. Seated with Mr. Grohe, left to right, are Laverne Marmitt, Doris Ingram, Sandy Grover and Rosemary Morano. Standing, left to right, are Milt Wadman, Bob Pekarek, Bob Biesiedzinski, John Little, Sheldon Isenberg and Gary Groshart. Honored also were 17 employees who have completed five or more years with the company. Honorees were I. Dittmer, R. Moats, J. Augustin, G. Schuetz, E. Doyle, J. Sowka, R. Rafe, B. Ryland, R. Deisinger, M. Cooke, I. Tarte, J. Trichinotis, O. Doehler, J. Sufie, D. H. Huss, W. Kostelny and R. Sideikas. Considering Warnecke has a total of 77 employees, this group represents a good percentage for an 11-year-old company.

Historically Speaking . . .



THE SM-62 SNARK, America's first intercontinental guided missile, was a high altitude, swept-wing, single-engine, jet-propelled missile with self-contained, nonjammable, stellar-monitored guidance equipment. Launched by two ejectable solid propellant booster rockets attached to the fuselage, the Snark cruised at high altitudes and near-sonic velocities. It could carry out its mission despite night or inclement weather and deliver its nuclear warhead with unprecedented accuracy more than 6000 miles. It was flown repeatedly from Cape Canaveral, Florida, to Ascension Island — a distance of 5000 statute miles. The Snark was designed to deliver a nuclear or other first priority warhead to any military target in the world, operating from bases available to the U.S. Strategic Air Command with Presque Isle, Maine, as the first base to be equipped with the Snark.

Overall Length: 69 feet
Wingspan: 42 feet
Height: 15 feet
Weight: Launching weight (excluding boosters) – 50,000 pounds; airframe, guidance system and warhead – 24,000 pounds
Internal fuel: 21,000 pounds
External fuel: 5000 pounds
Range: Intercontinental, more than 6000 miles
Powerplant: Pratt and Whitney J57-P-17 turbojet engine with 10,500 pounds of thrust

PRESENT PAPER

Dr. G.M. Andrew and M.S. Cahn, Northrop Research and Technology Center, delivered a paper entitled, "Shock Wave Attenuation at Transonic Velocities," at the Western Applied Mechanics Conference.

SKATING DISCOUNT

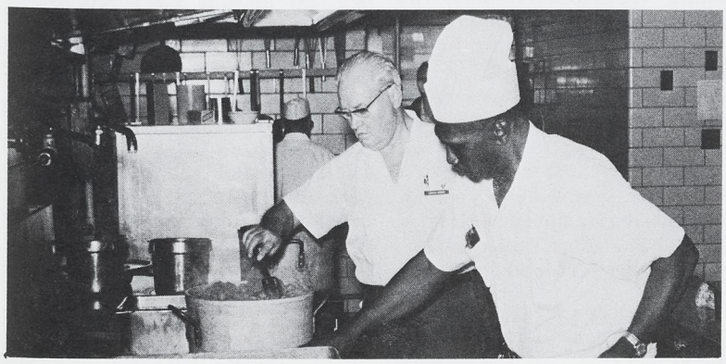
Ice Capades Chalets are offering an Ice Skating Special under the Industrial and Group Discount Plan every Tuesday, Wednesday, Thursday and Friday from 11 a.m. to 5 p.m., except Santa Monica, and 8 p.m. to 10:30 p.m.

CREDIT UNION RAISES LOAN INTEREST RATES

Faced with a rapidly changing money market, the Northrop Hawthorne Credit Union board of directors was forced to raise some of the loan interest rates as well as some of its loan policies effective Sept. 17, according to Harvey Cook, president.

Under these changes, first trust deeds for residential property is 8.4 per cent annual percentage rate (APR); income and resort property, 9 per cent APR; and homeowner loans, 12 per cent APR. Second trust deeds maturity will be increased to 10 years.

Personal loan schedules have been liberalized also and are available upon request at the main Credit Union office, Plant One, or through the Credit Union branch office in each facility.



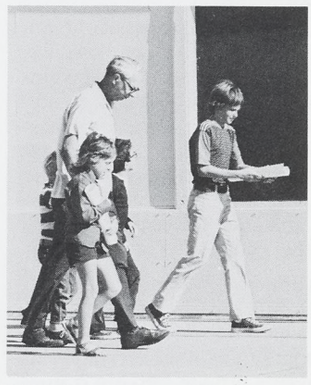
DURING THE recent torrential downpour which caused flooding in parts of Vance AFB and Enid, Okla., Northrop Worldwide Services, Inc. personnel were on hand to help flood victims. Shown preparing food for Enid's St. Mary's Hospital are Vance Division's Superintendent of Food Service Charles Herring and First Cook Ural Little. More than 600 hot meals were prepared by the dining hall for patients at the hospital. (Photo courtesy of Airscoop)

Palmdale Open House

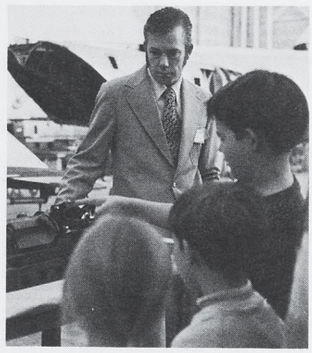
Photos by Sam Orr

SUPERVISOR Dave Hogarth III explains finer points of F-5E's engines to Inspector Ralph Feller, his children, John, Tim, wife Diane, and other guests.

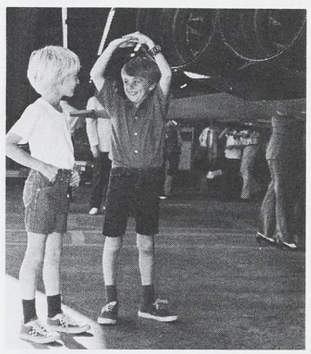
GENERAL SUPERVISOR Andy Dufrain, wife and daughter, right, look at Tiger II cockpit.



PALMDALE's Larry Wisken plays host and guide to grandchildren David, Jill, Darren and Derek.



SUPERVISOR Dennis Wible shows F-5E's 20 mm gun display.



SO BIG are the exhaust stacks to two young visitors.

SAM WHITFIELD and wife, Amanda, came from Hawthorne, along with nephews Charlie and Elvis.

MICHELLE and Tod Starling, children of Robert Starling, eat two of the 37 dozen ice cream bars served.

ON ALCOHOL, DRUG DEPENDENCY

Northrop Initiates Program

Alcoholism and drug dependency are recognized by Northrop as illnesses that can be successfully treated. And now the Southern California operations are undertaking a program to assist employees in need of guidance and rehabilitation under the direction of Richard J. Krebsbach, M.D., Corporate director of Medical.

Mr. Thomas

Thomas V. Jones, president, announced that, "The company expects full cooperation from the employee in his or her rehabilitation program. If the employee does participate in a program of rehabilitation, he or she will receive the same consideration and benefits, where applicable, as employees having any other illness."

In a briefing by Duncan Thomas, Corporate employee counsellor, it was pointed out that the company has no intention of interfering in an employee's private life, but it may properly become involved when the employee's job performance is affected, on a continuing basis, by excessive use of alcohol or other drugs.

The Employee Counselling Program has been established to supplement existing Employee Benefit Programs to assure maximum effort in assisting employees with these problems. To retain valued employees, restore them to full production through early identification, motivate them to seek help for their problem and finally to refer the employees or their dependents to the appropriate outside resources for treatment, are our main objectives.

It is good business to return a troubled employee to full productivity and reduce a financial loss to the corporation. Far more important, however, is the reduction in human suffering caused by these problems. "This cannot be measured in dollars and cents," stated Mr. Thomas.

"We welcome all self referrals and it is important that the employees seeking help know that all work with and for them in this regard will be handled in a complete confidential manner and will not appear in their personnel records," Mr. Thomas said.

"We are currently scheduling briefings for all supervision in each of the facilities. The Corporate Employee Counselling staff will assist the divisions in establishing procedures to provide for management training in the appropriate use of the Employee Counselling Program," Mr. Thomas explained.

The Medical director and the Employee Counselling staff are also enlisting the help of recovered alcoholics to serve as volunteer counsellors from each division. Anyone interested in helping in this capacity or requests for additional information about the program should contact Mr. Thomas at the Hawthorne Industrial Medical Center, ext. 1131.

Though the described program will be implemented initially only at the Southern California divisions, it is anticipated that expansion on a company-wide basis will be possible in the near future, and plans are under way.

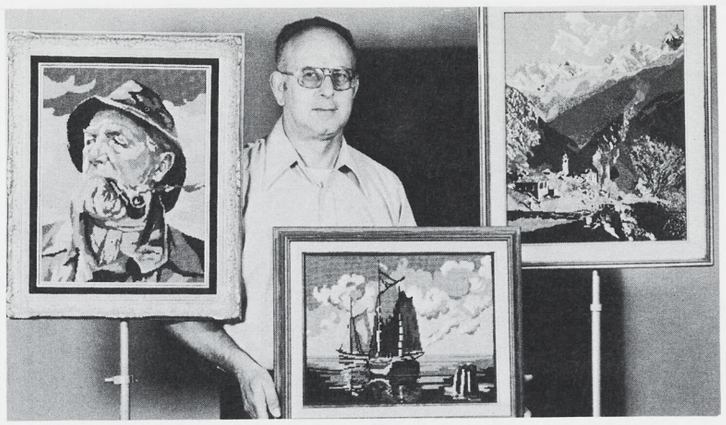
DOUG SAGEMAN, 13-year-old son of Ken Sageman, Northrop Architectural Systems machine operator, is a champion hockey player. His team, from the Whittier-La Habra area, won the state championship in the bantam league. Doug has been playing hockey since he was eight. He learned from his father who played the game in his native Canada.

EQUIPMENT SALE

The Electronics Division's Western Avenue warehouse facility will hold a sealed-bid sale of electronic class B equipment and a limited number of office machines in late January 1974. Bidders will be notified when the merchandise may be viewed in the January edition of the Northrop News. All divisions are invited.

MISSILE REUNION

The annual reunion of those people that worked on the Snark program in Florida, or the Titan I Site Activation program at Rapid City, South Dakota, has been scheduled for February 1974. Interested persons that have not been contacted by mail in previous years, should contact R.L. Greetan, ext. 1205, Aircraft, as soon as possible for further details.



JOHN Branzetti with his needlepoint creations.

Branzetti Creates Pictures With Yards of Colored Yarn

"It's quite a yarn — or rather it's a lot of yarn," said John Branzetti, Reproduction/Photo Services, Electro-Mechanical Division, about his beautiful tapestry pictures that created so much comment when he displayed his artistic creations recently.

The work, a form of needlepoint, is created by weaving colored yarns to achieve subtle color harmonies in pictures ranging from portraits to land and seascapes.

John took up the art to join his wife whose hobby is knitting. "Togetherness," he said, "and I needed something to keep my hands busy."

He began making tapestry pictures three years ago, beginning with commercially prepared patterns. As his skill increased, he branched out into his own creations and ideas. He found it easy from the start, for he had once painted in oils. "And this is the same as painting," he said. "Except that you use yarn instead of paints."

In making his original creations, John works mostly from photographs, sketching the design on the tapestry backing, changing and modifying the composition to suit himself. It takes an average of 200 hours to complete one picture. He recently completed a large view of the Swiss Alps and is working now on a 12/24 view of the Grand Teton Mountains in Wyoming.

Hawaiian Holiday Tour Plans Set

A briefing meeting for the Northrop Recreation Travel Club's 18th Annual Hawaiian Holiday was held at the NRC Clubhouse on Friday, Nov. 16 to discuss the upcoming tour.

This year's 11-day itinerary includes visits to Hilo and Kona on the big island of Hawaii, Maui, Kauai, and Waikiki on Oahu; first class beach front hotel accommodations at the Naniloa Surf Hotel in Hilo, the Maui Surf, the Kona Surf, and the Outrigger Hotel on Waikiki Beach.

The price is $495 plus tax per person. The flight to and from the islands will be via United Airlines departing Dec. 22, 1973, and returning Jan. 1, 1974.

Reservations will be accepted on a first come basis. Final payment for the tour is due Nov. 26.

Koller Achieves Education Goals

"It's been a hard, long struggle for Ronnie, but we never had any doubts that he would finally achieve his goals," explained Ron Koller, Transportation, Aircraft Division, referring to his son Ron, Jr.

Ron Koller

Dr. Ronald D. Koller, Jr., has been named the coordinator of the newly created recreation curriculum which has been established at the University of South Alabama. The program offers a B.S. degree in Recreation Administration and Therapeutic Recreation.

This appointment follows on the heels of Ron's Ph.D. awarded this past year from the University of Utah in the field of recreation and park administration. His previous education resulted in a B.S. degree from Pepperdine College, and an M.S. degree from San Francisco State College.

Married and the father of three, Ron has also achieved several civic awards including being named man of the year by the San Rafael, Calif., Junior Chamber of Commerce, 1968, and being represented in the 1972 volume of Outstanding Young Men of America.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Chevrolet, 1961 Impala, 283 V-8, auto., $150. 213-679-8374.

Motor Home, completely self-contained, converted from 60 pass. sch. bus, all extras, $2995. 213-532-0342.

Motorcycle, Honda 70, used very little, $275. 213-675-6206.

Volkswagen camper, 1971, pop top, 28,000 mi., sleeps 2½, $2900. 213-373-5950.

Plymouth, 1966, r/h, a/c, 2 new tires, $475. 213-676-0972.

El Camino, 1970, SS 396, 4-spd., shell customized, r/h, $3000. 213-325-9470.

T-Bird, 1963, pwr. & air, $550. 213-941-1865.

Dodge, 1965 Dart, 273 cu. in. V-8 eng., auto. trans., p/s, radio, $550. 213-371-2618.

Motorcycle, 1970 Yamaha 175 Enduro, $300. 213-374-8608.

Chevrolet, 1957, rebit. eng., $375. 213-542-3998.

Chevrolet, 1962 Impala, 4-dr., $100. 213-379-7488.

Motorcycle, 1970 Harley Davidson Sportster, semi-chopped, $1800. 213-973-4499.

Volkswagen, custom 1967, 47,000 mi., new eng., $1000. 213-644-9966.

Volkswagen, 1963, 12,000 mi. on rebit. "Big Bore eng., radio, $300. 213-379-0784.

Plymouth, 1968 Custom Suburban wagon, 3 seats, air, p/s, p/b, front disc, $900. 213-379-7853.

Oldsmobile, 1963 Starfire, p/s, p/b, 2 new tires, $195. 213-756-7284.

Cougar, 1967 XR-7, auto., p/s, d/brakes, 5 new tires, $1250. 213-373-8163.

Cougar, 1970 XR-7, AM/FM radio, a/c, $2400. 213-372-1457.

Chevrolet, 1957 Bel Air, 6 cyl., $400. 213-324-7259.

Pontiac, 1968 Firebird 400, full power, air, auto., 62,000 mi., $1100. 213-886-4133.

Buick, 1967 Riviera, many extras, $700. 213-370-0628.

Dune Buggy, 1959, fiberglass, street legal, seats 4, $1000. 213-542-1165.

Motor Home, 1970 Winnebago, 24', s/c, Dodge chassis, roof air, gen., $7500. 213-378-1026.

Pickup, 1968 Chev., V-8, ¾-ton, a/c, p/s, p/b, hvy. duty tires, camper shell, $2450. 213-931-6937.

Mustang, 1970, many extras, $1950. 213-375-0017.

Motorcycle, 1972 Honda CL 350, 5000 mi., rebit. eng., $600. 213-374-6445.

Volkswagen, 1965, sunroof, many extras, eng. just rebit., $900. 213-645-9690.

Motorcycle, 1972 Bultaco Pursang 250, desert MX tanks, skid plate, $700. 213-324-8266.

Motorcycle, 1972 Honda CL-350, fwy. bar & back rest, manuals, $695. 213-291-0025.

Trail Bike, Hodaka 100, all access., $395. 213-645-2711.

Chevrolet Blazer, 1973, p/s, p/b, a/c, 350 V-8, h.d. suspension, auto., AM-FM 4 w/d, $4395. 714-774-9920.

Motorcycle, 1972 450cc Honda CB-K5, 2000 mi., $750. 213-576-2770.

Truck & camper, 1966 Chev., ¾-ton, 6 cyl., 225 h.p. eng., just o/hauled, 10½' cabover camper, $1800. 213-833-0346.

Ford, 1937 coupe, all orig. parts, rebit. V-8 eng. not installed, $1000. 213-926-4715.

Buick, 1965 Electra 225, full power, r/h, a/c, $650. 213-838-5967.

Ford, 1969 LTD, a/c, p/s, $1500. 213-644-5082, 213-789-1963.

El Camino, 1973 454 SS, full power, a/c, auto. trans., $3750. 213-421-0900.

Datsun, 1968 Roadster, new clutch, $650. 213-676-1580.

Miscellaneous For Sale

Bicycle, man's, $25. 213-373-7953.

Skis, Plymold fiberglass, 7' 1", 215 cm, w/Cobri bindings, $45. 213-371-3310.

TV, color, 21" Zenith, $50. 213-645-3592.

Cemetery Lot, dble. internment, Inglewood Park, El Portal sec. 311, $750. 213-676-8861.

Coffee Table, lamp tables, custom designed, glass topped, bleached mahogany w/mahogany bark legs, $125. 213-644-3922.

Piano, Ivers & Pond upright, hand carved walnut cabinet, pre 1920, $300. 213-335-3940.

Miscellaneous For Sale

Couch, vinyl, black, $40. 213-675-7204.

Boat, 12' John Fisher, 7 h.p. motor, motor stand, bait tank & oars, $350. 213-679-3492.

Scooter, child's lge., $6. 213-675-1057.

Pool Table slate, ¾-size, $300. 213-329-9449.

Highway Trailer, $150. 714-549-2001.

Metronome, Seth Thomas key type, little used, $7.50. 213-679-0010.

Desk, bookshelf & cabinet set, $40. 213-323-3202.

Camera, Polaroid, mod. 340, complete w/attachs. & case, $80. 213-973-1725.

Camper Trailer, collapsible, sleeps 4, stove, $250. 714-586-2344.

Rubber Raft, 10-man, 8' x 15', $75. 213-323-5007.

Tires, L-60x15, & 60x15, Goodyear, $15 ea. 213-333-9139.

Pottery Set, rose, $25. 213-676-6009.

Engine, Chev. 6 cyl., 235 cu. in., complete newly rebit., $150. 213-325-7561.

Bicycle built for two, Schwinn Deluxe Twinn, 5-spd. derailluer, $100. 213-326-9528.

Dryer, 1971 Sears Best Kenmore, elec., coppertone, $70. 213-532-8201.

Table lamps, 2, 3-way switches, walnut w/brass, $25. 213-530-3521.

Bicycle, Schwinn Continental, 10-spd., new tires, $70. 213-378-2790.

Bicycle, boy's 3-spd., $25. 213-530-0501.

Boat, 1970 Glasspar Cutlass, tri hull, full canvas, 80 h.p. Mercury outbd., Merc A Matic controls, 18 gal. gas tank, C. G. approved, on American std. whl. trailer, $500 & assume loan. 213-781-8187.

Hutch, solid maple, near new, $49.95. 213-370-0824.

Couch, lime, 7' 9" long, $100. 213-324-3625.

Bed, roll-a-way, single, $25. 213-675-7740.

Fishing Rod, deep sea-type, custom 820b by 3 Guys, $20. 213-323-7171.

Bed, dble., hardwood, $25. 213-530-3666.

Tires, 2 6.50 x 13", mounted on wheels, used, $20. 213-926-7667.

Engine Parts for 1600 VW, generator, $35, other misc. items. 213-324-9769.

Boat, 16' Tahiti, inbd., 396 Chev. eng., Berkeley jet, incl. trailer & cover, $2300. 213-378-2571, 213-697-8425.

Seats, front, 2, for 1965 VW, $10 ea. 213-679-6449.

Electronic Flash, Sears, rechargeable batts., $20. 213-377-4230.

Utility Trailer, $35. 213-834-3290.

Rug, Persian, 4' x 6', exotic design, $650. 213-375-9377.

Coat, boy's size 18 Navy CPO, $10. 213-374-4230.

Sun Lamp, Desert-Air, $50. 213-679-7909.

Guitar, elec. w/clutch & amplifier, $60. 213-443-3332.

Target Pistol, Smith & Wesson .22 cal. CO_2 single shot, fully adjust., $30. 714-774-3340.

Shotgun, Browning auto., $110. 213-674-5953.

Love Seat, recently recovered, gold brocade, $250. 213-831-3661.

Cruiser, 28' Royal Baltic, 9' 2" beam, twin Volvos BB70, sleeps 4, elect. head, hot press. water, 100 gal. fuel capacity, many extras, $4500. 213-255-1309.

Captain's Chair, 4, different colors, $15 ea. 213-675-1000.

Fruit Jars, 25 to 30, & numerous lids, $15. 213-675-6668.

Console, RCA, walnut, stereo, AM-FM record player, $50. 213-631-6480.

Charm Bracelet, w/90 day, 3, 5, 10 & 15 yr. pins made into 14K charms, $100. 213-679-5212.

Ski Boat, 1970 Tahiti, 16', 455 Olds eng., Berkeley jet, w/access., $3200. 213-328-7571.

Fifth-Wheel Coach, 1972 El Dorado, 18½', many extras, $3650. 213-323-1768.

Dollhouse, handmade of wood, tile roof, completely finished o/side, 23" w., 12" d., 23" h., $30. 213-483-6789.

Books, communications of the ACM & Journal of the ACM, 1961-1965 & 1961-1964, $12.50 vol. 213-559-2350.

Drum Set, 5 drums incl. cymbals, flat hat-type, $100. 213-377-2544.

Drum Set, pearl finish, w/high-hat & floor stand, tom-tom & lge. Zildjian cymbal, $195. 213-762-9813.

Pup, silky terriers, males, AKC reg., will hold for Christmas, $150. 714-637-7662.

China, Noritake, 100 pcs., Goldart pattern, $175. 213-376-4831.

Refrigerator, Sears Coldspot, frost free, bronze, $80, other items. 213-679-0853.

Ping Pong Table, near new, $35. 213-944-7666.

TV, 17" RCA, color, 1974 mod., $250. 213-765-1277.

Bed, dble., h/board, frame, rebit. springs & mattress, $35. 213-644-7079.

Wheels, 13" mag, fit Toyota, Datsun, Ford Falcon or Chevy II Corvair, $50. 213-675-0116.

MacCorkell Earns Big Game Fisherman Title At Catalina

Bill MacCorkell, engineer, Tactical Avionics Department, Electronics Division, has earned the title of big game fisherman after a recent outing off Catalina Island which saw he and his wife, Florie, Teletype operator, Palos Verdes, land a 132-pound marlin.

The MacCorkells, who have been deep-sea fishing for 15 years as members of the Northrop Sea Anglers, were trolling about one mile from Church Rock on the backside of Catalina when his reel suddenly began to "scream" and he realized he had hooked something big.

"Somehow I managed to handle my reel while at the same time waking up Florie who proceeded to run the boat for the first time in her life as I yelled instructions," Bill related.

"An hour and a half later I landed the marlin and after trolling for a couple hours longer, returned to Avalon where the ceremonial cannon was fired and we were given a bottle of champagne while pictures were taken."

Florie summed up the day's events as ". . . the most beautiful day I can remember; Bill became a big game fisherman and I was captain for a day!"

BILL AND FLORIE MacCorkell display 132-pound marlin they caught.

Miscellaneous For Sale

Transmission, auto. for 1955-57 Chev. V-8, rebit., $100. 213-671-6262.

Bucket Seats, for 1969 Toyota, reclining type, w/rear seat, $45. 213-752-7342.

Desk, lge., wooden, w/swivel chair, $28. 213-371-2664.

Dining Room Set, 4 chairs, table w/leaf, gold uphol., $50. 213-672-1090.

Wedding Dress, size 11/12, white, $30. 213-324-3250.

Engine, 1959 Porsche 1600S, zero miles since rebit., $650. 213-377-5107.

Freezer, 15 cu. ft. upright, $100. 213-320-0259.

Piano, Baldwin, maple spinet, $480. 213-326-8085.

Piano, Kohler Campbell, $500. 213-838-5416.

Sofa, blue contemporary Herculon, w/attached walnut end tables, other items, $150. 213-530-7939.

Bedspread, girl's, twin, $5 other items, sell sep. 213-676-3050.

Fender Mount rear view mirrors, $15. 213-679-6982.

Dark Room equipment, complete, w/4x5 Speed Graphic camera, $350. 213-862-3310.

Mobile Home, 1960 Kit Stateliner, 10' x 50' 2-bdrms., bath, unfurn., 8' x 40' screened-in awning, $3500. 213-582-3844, 714-534-9609.

Mimeograph Machine, Speed-O-Print, incl. stencils, $50. 213-374-6003.

TV, color, 21" RCA console, 6 yrs. old, $95. 213-644-2831.

Dishwasher, avocado green, portable, 24" square cutting board, 2 spds., $100. 213-644-1741.

Wheels, 4 Riviera-type custom chrome & tires, 14", $30. 213-676-7109.

Camera, Koni Omega Rapid M w/90 & 180mm lens, $425. 213-848-9110.

Sewing machine stand, fits any model, portable, assembled, $14. 213-545-0030.

Typewriter, portable Tower, case, $25. 213-675-6020.

Movie Camera, GAF mod. ST90 Super 8mm, telephoto zoom-lens, elec. eye, 2 spds., $65. 213-375-4574.

Waterbed, queen size, complete, mattress, safety liner, angle frame, padded h/board & pedestal, $85. 213-372-6587.

Dinette Set, 9-pc., high back, green paisley, $70. 213-328-2046.

Boat, 1973 Hobie Cat 16, trailer, trampoline, striped sails, trapeze, extras, $1800. 213-376-6668.

Boat, 19' Johnson Tri-Hull, 200 h.p. o.m.c., C.G. equipped, trailer, Surge bks., $2500. 714-528-1180.

Camping Trailer, easy-towing 5' x 8' 1962 Kreuger Travelaire Viking, expands to weathertight alum. cabin 8' x 10' for 3 persons, many extras, $150. 213-434-1795.

Crib & mattress, walnut, $15. 213-395-4801.

Wanted To Buy

Washer & dryer, gas. 213-534-0379.

Camera, lens, access., 4x5 portrait view. 213-375-4747.

Square Dance dresses, size 8-10. 213-370-9102.

Tricycle, 3-wheel, 3-spd., for senior citizen, box or wire basket attached, must be good condition. 213-530-3248.

Souvenirs, German & Japanese military, from WWII era. 213-375-4312.

Stepping Stones, concrete, rectangular, all colors. 213-372-5508.

Free (To Be Given Away)

Pup, male, 3 mos. old, mixed spaniel, needs good home. 213-675-5920.

Couch, 3-pc. sectional, needs upholstering. 213-370-9037.

Personals

Ride wanted, 8 a.m.-4:42 p.m., Knott & Crescent Sts., Buena Park, Aircraft ext. 1062, 714-995-3767.

Wish to join or form car pool, of 4 persons, from vicinity of Adams/Hamilton & Brookhurst/Magnolia in Huntington Bch. to Aircraft Div., 7:30 a.m.-4:12 p.m., Aircraft ext. 1929, 714-938-0038.

Rider Wanted from El Toro, Laguna Hills area to Aircraft Div., 7 a.m.-3:42 p.m. shift. Aircraft ext. 1729, 714-830-2032.

Ride Wanted, or will alternate driving to & from Garden Grove area, 7 a.m.-3:42 p.m. shift, Aircraft ext. 4216, 714-530-5419.

Ride Wanted, 7 a.m.-3:42 p.m., vicinity of Alondra & Vermont, Aircraft ext. 2252, 213-327-9255.

Ride Wanted, from Pioneer and South St., Cerritos to Plant One, 7 a.m.-3:42 p.m., Aircraft ext. 2309, 213-860-2948.

Ride wanted, Centinela & Florence, Inglewood, 7:18 a.m.-4 p.m., Aircraft ext. 1191, 213-674-4563.

Ride Wanted or join car pool, 7:30 a.m.-4:12 p.m. from Hwy. 605 & Lincoln to Hawthorne, Aircraft ext. 1711, 714-826-8998.

Ride Needed, Saugus-Soledad Canyon Rd. & Whites Canyon Rd. area, 7 a.m.-3:42 p.m., Aircraft ext. 4216, 805-251-0847.

Ride Pool, from Thousand Oaks & Canoga Park areas to Hawthorne, 8 a.m.-4:42 p.m., NRTC ext. 2177, 213-889-5481.

Ride offered, from Upland-Ontario area, Aircraft Div., 7 a.m.-3:42 p.m., Aircraft ext. 1572, 714-985-8759.

NORTHROP NEWS

Vol. 31 **No. 11**

Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey; editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Peter Goodall, Precision Products Department. Correspondents: Wanda Fisher, Northrop Architectural Systems; Joe Anguiano, Northrop Hueneme.

Mailing address: Northrop News, 172/40, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

From B-35 to Present, Bailey Likes His Work

Norman R. Bailey, Manufacturing engineer, Hawthorne, heads up a list of 19 Electronics Division members receiving service awards during November.

Norman is observing his 25th anniversary with Northrop during which time he has worked in planning and manufacturing engineering in both the Aircraft and Electronics Divisions at Hawthorne and Palos Verdes.

Beginning as a structural assembler on the B-35 prop-driven flying wing, Norman has worked on the jet program for the B-35; the F-89 fighter program; F-101 (McDonnell) program; the Boeing Wing (707); the RB-66 laminar flow wing; and has been a member of the former Space Laboratories now known as the Northrop Research and Technology Center.

Mr. Bailey

"Throughout the years the people I have worked with at Northrop have really been great. The saying is honestly true — 'Northrop is a good place to work,' " Mr. Bailey said.

Twenty-year anniversaries are being celebrated by six division members including Clinton Gwinn, Palos Verdes; and Edward Bennink, Thomas Koenig, Richard Albrecht, Henry Rosen, and Tony Simone, Hawthorne.

Other service awardees during November are: 15 years — Edward Muehlberger; 10 years — Mary Wiesner, Leroy Esser, David Whale, Chester Wetzel, and Donald Bacon; 5 years — John Gaudlitz, Edward Diamond, Daniel Winters, Gene Yee, Dennis Chambers, and Lisa Smyers.

NRC Workers Preparing for Family Party

The NRC councils of the Electronics and Aircraft Divisions are hard at work to have everything ready for the annual Northrop families Christmas party scheduled for Sunday, Dec. 9 at the Shrine Auditorium.

Two shows, at noon and 4 p.m., will feature cartoons, presents, children's acts, refreshments, and of course, Santa Claus.

Parking at the Shrine will be $1 for Northrop employees.

PREVIEW SHOWING of the TOP/20 computer to be used in the fire control system of the F-17 Lightweight Fighter was given to field office representatives by Wally Pfeil, standing, program manager, during recent seminar at Palos Verdes.

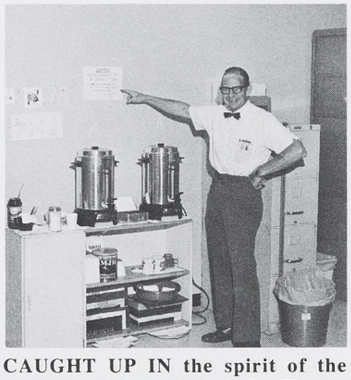
Division Members Eager To Launch Gift Program

Division personnel are eagerly preparing projects and fund raising campaigns for the beginning of the Christmas Gift Program which begins Monday, Nov. 26.

The annual campaign gives Northrop personnel a chance to help needy families or organizations to have a better Christmas and relies solely on the gift donations collected by the departments who wish to adopt a family.

On Nov. 26, organizations will be permitted to solicit gift donations during lunch and break periods to provide needed items. Fund raisers are urged to deposit cash daily with Personnel Activities for safekeeping and to assist in accountability. Deadline for collecting money and negotiables is Dec. 14.

Members of the Christmas Gift Program steering committee are: Doris Robinson, Julie Jones, Polly Middleton, Charles Eyres, Pat Anderson, Bill Helm, Ann Oberlander, Gloria Roberts, P. J. Politan, Renee Cassatt, Bonnie Beck, Bill Hayman, Pam Reed, Wilma Mechling, Nathan Kates, Robert Weiss, and Marie Tully, chairman.



CAUGHT UP IN the spirit of the Christmas Gift Program is Joe Hamer, Intelligence Systems analyst, Palos Verdes, who has been in charge of the Tactical Avionics Department coffee fund, all of whose proceeds go to the program. Joe arrives at work an hour early from his Orange County residence so that the coffee will be ready and stays after hours until the area is cleaned up.

Signups Urged To Support AID, NORAID Drive

For those who enjoy helping others not only during the holiday season but all year round, it's sign-up time for the AID-United Givers and NORAID contribution drive.

By designating a small percentage of your weekly paycheck, you are helping numerous charity organizations sponsored by AID, or you may designate a favorite charity to receive your contribution.

Signup and redesignation of contributions must be accomplished before Wednesday, Dec. 21, by filling out a designation form through your department clerk or at Personnel Activities. Your help is needed!

TRAINERS

(Continued from page 1)

Primary assembly of the subsystem is taking place at the Hawthorne facility under the direction of Donald Chaney, program manager, and Larry Dietz, project engineer. Fred Macary is the field service representative at Boeing, Renton, Wash., where the subsystem is installed in the aircraft.

The navigational computer provides real-time capability for each student to calculate aircraft present position, obtain radar position fixes, and update present position computations by displaying the information independently at each student station. The computer also allows for the selective faulting or inhibiting by the instructors of doppler or INS (Inertial Navigation System) data to the students. Utilization of the NTS is based on a projected life expectancy of 25 years.

BSL Golfers to Be Honored for Tournament Play

Trophys will be awarded to the winners of the Berkeley Scientific Laboratories, Hayward, singles and team play golf tournaments in November, according to Rolfe Pope, Medical Data Systems Division.

Final standings of the singles tournament had Ken Lame taking first place followed by Mark Reisinger, Larry Ray, Clyde Coller, Mike Turney, Ed Klein, Nelson Owens and Fentress Hall.

Team play found Nelson Owens and Martin Latona taking the top spot followed by the teams of Ken Lame-Ed Klein, Mark Reisinger-Fentress Hall, Gary Taylor-Clyde Coller, John Barrett-Dave Acao, and Larry Ray-Vic Gausepohl.

BLOOD DRIVE

Division personnel are reminded of the Bloodmobile Drive Thursday, Dec. 13, from 9 a.m. until 1 p.m. in the cafeteria annex at Hawthorne. For an appointment card contact Arnah Pakes at Medical, ext. 261.

RETURN TO: PETER J. CASEY, CHAIRMAN
MINORITY AND FEMALE ADVISORY COMMITTEE
A4333/A60

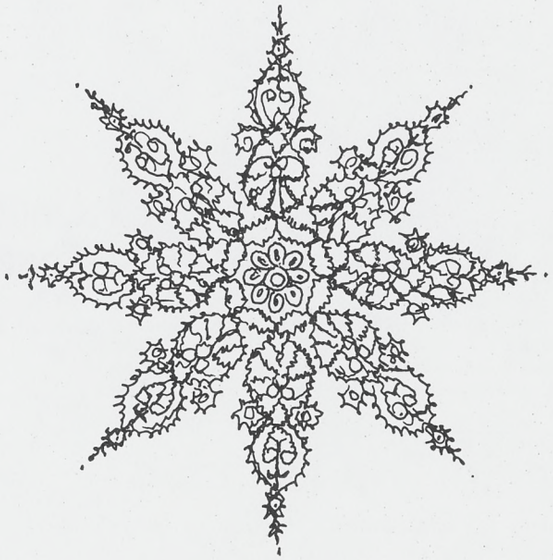
I recommend _____ to receive recognition for his/her performance toward achieving equal opportunity.

SIGNED _____

ORGANIZATION _____

NORTHROP NEWS

Season's Greetings



Season's Greetings

To the Men and Women of Northrop:

As another year draws to a close, I would like to thank each and every one of you for your loyalty and dedication to Northrop. Your efforts are what have helped your company to maintain a position of stability and respect, and to progress as we have in the year just passed.

The knowledge and effort you bring to your job enable the person beside you on the production line or in the next office to do his or her job; and I know that our combined efforts will permit us to overcome the problems which we are bound to face because of the energy crisis and related constraints.

The year 1974 will offer challenges – and opportunities – for us to meet and fulfill. I look forward to our continued association in meeting our common goals. In spite of the problems we foresee, let each of us pause and reflect upon the good things in our lives, and carry forward the spirit of this Holiday Season to sustain us in the year to come.

Mrs. Jones joins me in wishing you a very Merry Christmas and a Happy New Year.

Thomas V. Jones
President

To Electronics Division Personnel:

Thanks to the combined efforts of everyone within our organization, 1973 has been a very successful year for the Electronics Division. The coming year promises to offer still greater opportunities and challenges for all.

With our well-earned vacation period almost upon us, I wish each of you and your families a very happy and relaxing holiday season.

David N. Ferguson
General Manager

HARDWORKING personnel of the Northrop Hawthorne Credit Union managed to spare a moment for this holiday greeting to all employees. Extending best wishes for the holidays are Margaret Faubion, Florence Montgomery, Norma Thomas, Elaine Pillar, Nellie Boener, Helen Walker, Wilma Robinson, Janet Montrelli, Sybil Muller, Jessica Matthews, Vinnie Derus, Debbie Johnston, Kathi Hunt, Gloria Orona and Mary Delaney.

June Mountain Trip Planned

A gala weekend of skiing is scheduled for Jan. 11, at June Mountain, Calif., and according to Ski Club Commissioner Rick Crane, "we are expecting a full bus load."

The $37 price per person will include all travel, lodging at the Big Rock Lodge, a steak dinner complete with cocktails, and two full days of skiing.

The bus will leave Hawthorne Friday, Jan. 11, at 6:30 p.m. and return Sunday evening. For reservations contact Rick, Aircraft ext. 1780, or John Rufino, Electronics ext. 538, Palos Verdes.

Hybrid Omega Systems to Be Used in Weather Study

A seven-month program that will serve as a true research program for more precise predictions of weather in tropic regions will begin in June 1974 and three Northrop hybrid Omega inertial systems will serve an integral part of the experiment.

Project GATE (Global Atmospheric Research Program Atlantic Tropical Experiment) will be undertaken as a joint venture of several nations with many ships and planes taking part in the exercises off the west coast of Africa.

Participants from the United States will be the National Oceanic and Atmospheric Administration (NOAA), National Center for Atmospheric Research (NCAR), NASA, and units of the U.S. Air Force.

USAF and NOAA C-130 aircraft will be equipped with the AWRS (Airborne Weather Reconnaissance System) Intertial/Omega system and a DC-6 flown by NOAA will utilize an ARN-99 (V)2 Omega Navigation System integrated with a Carousel IV inertial navigator.

"These Northrop systems were selected for this project because they represent the most accurate airborne reference systems in the world," explained N.V. 'Mitch' Micheletti, Applications engineer, who has been coordinating the Electronics Division's participation with the national organizations.

Jack Brennan, program manager for the development of hybrid Omega equipment for Project GATE, noted that delivery of the hardware will be concluded by April 1974 and that Northrop would supply ground support during the project.

Assisting Mr. Brennan will be Don Murray serving as project engineer.

Don Vigil Gains Instructor Degree To Teach First Aid

Don Vigil, Plant Protection specialist, Hawthorne, has graduated from the instructor course on standard first aid and personal safety as conducted by the Greater Los Angeles Chapter of the American Red Cross.

Mr. Vigil

Don will now assist J.J. Rahiya, Safety, as an instructor in the division program of training employees in first aid procedures beginning in February.

Lindsay, Johnson Combine for Title

Over 400 golfers competed in the annual Electronics-Aircraft Division Twi-Light Golf League championships in November and when it was over the team of Warren Lindsay/Dick Johnson was the winner with a 156 followed by Ed Powell/Vern Wilson with a net 157.

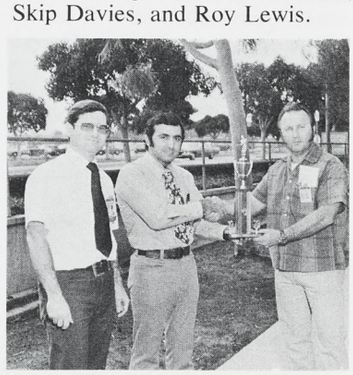
Also carding a 157 was the team of H.A. Johnson/Don Lynch which finished third (ties were determined by sudden death on the score card) and S.H. Smith/Rod Wilkes took fourth. Individual low net honors went to Bob Oyama with a 72 and Shig Okada who took the Captains and Guest Flight with a net 70.

Apollos Capture First-place Trophy In Winter Softball

The Northrop Apollos used solid hitting and tight defense to win the championship of the 1973 Lomita Parks and Recreation Dept. Men's Winter Fast-Pitch Softball League played at Eshelman Park.

Coached by Sonny Herron, the Apollos rolled to a 9-1 record behind the pitching performances of Harry Moromisato and Sonny, and the hitting of Pete Weise, Rob Tracy, and Vernon Lee.

Other members of the champion Apollos were Bill Moore, Frank Seal, Gary VanWinkle, Ben Soliata, Tom Ogata, Dale Hashimoto, Skip Davies, and Roy Lewis.

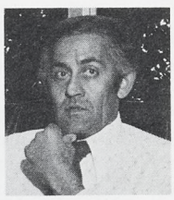


PRESENTING the championship team trophy on behalf of the Northrop Apollos is player-coach Sonny Herron, right, to Sal Pranzo, Electronics Softball commissioner, center, and Ed Sterbenz, NRC president.

NEWLY ELECTED officers of the NRC council are left to right, seated, Dennis Mahaney, vice president; Maxine Lewis, secretary; Frank McGinley, president. Standing are Dorothy Baldwin, treasurer, and Glen Gardner, sergeant-at-arms.

A.T. Migliori Elected BSL Vice President

A.T. Migliori has been elected vice president and general manager of Berkeley Scientific Laboratories, Inc., Business Data Systems Division, as announced by David N. Ferguson, Corporate vice president and general manager, Electronics Division, and president, Berkeley Scientific Laboratories, Inc.



Mr. Migliori

Mr. Migliori previously held the position of manager of the Torrance-based plant which develops, manufactures, and markets business oriented mini-computers. He joined the company in July 1972.

DANCE SET

Tickets still remain for the NRC New Year's Eve Dance scheduled for Monday, Dec. 31, in the NRC Clubhouse beginning at 9 p.m. Ticket price is $5 per person and includes liquid refreshments, noisemakers, and door prizes. Dancing will be to the music of Bill Stroub and his orchestra.

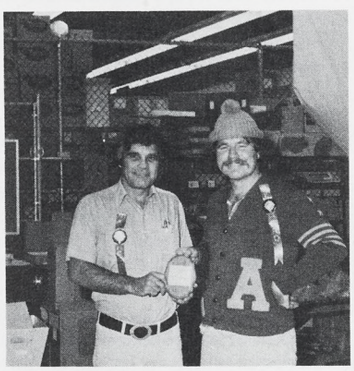
Two Laboratories, Hospital Buy Medical Data Systems

Berkeley Scientific Laboratories, Inc., Medical Data Systems Division, Hayward, a subsidiary of Northrop, has announced the sale of three medical data systems to facilities in the eastern United States.

CLINDATA 200 systems have been purchased by North Miami General Hospital, Miami, Fla., and Interstate Pathology and Reference Laboratories, Columbus, Ga. A CLINDATA 400 system has been ordered by the Syracuse Clinical and Reference Laboratories, Syracuse, N.Y.

The 400 system going to Syracuse will include 8K computer, disc storage, magnetic tape unit, hi-speed line printer, and three data input consoles.

Interstate Pathology will receive 4K main memory computer, 8K MOS memory, two system terminals including one CRT, and three data input consoles as part of its 200 system. North Miami General Hospital's 200 system will consist of 4K main memory, 8K MOS memory, three system terminals including one CRT, and four data input consoles.



WILLIAM C. McCreary, left, and Rodger Howes, were recently presented the BSL extraordinaire award for unflinching service in restoring the stockroom to normal operation following an unexplained accident which caused all the shelving to collapse. In addition to hero ribbons and engraved plaques, the duo received a traditional kiss on both cheeks from June LeSire, secretary.

PACKED AND READY for shipment is system number one of the Navigation Guidance Functional Group for the Airborne Warning and Control System (AWACS) being developed by Boeing. Pictured with the hardware are left to right, front, Charlie Lyon, Jack Brennan, Joe Perrigo (Boeing Quality Engineering), Chuck Cook, and Lou Colombano. Back, J.R. Fletcher and Tony Laviano.

Service Awards Earned by Ten

Ten division members are celebrating an additional day during this holiday season as they observe anniversary dates in the month of December.

Receiving 20-year service awards are Pedro Espinosa, Cecelia Kenny, Jeanne Saxon, Warren Worthington, and Ellis Kennedy. 15 years — Art Nelson. 10 years — Marjorie Schrop and Warren Van Swearingen. 5 years — Karl Baird and Melvin Paiva.

CHILDREN HIGHLIGHT NRC CHRISTMAS PARTY

Corporate Safety Seminar Held at Aircraft Division

A two-day seminar sponsored by the Corporate Safety, Reliability and Maintainability (SRM) Committee, was held at the Aircraft Division for the purpose of providing an opportunity of exchange of ideas.

Dr. D.A. Hicks, Corporate vice president, Research and Technology, under whose guidance the SRM Committee operates, was the opening seminar speaker. He stressed the need for Northrop continuing to be a leader in these areas and noted that while low cost is of prime importance to the customer, sales are heavily dependent on our products also being reliable, maintainable and safe.

Facilities represented were: Corporate offices, Aircraft Division, Electro-Mechanical Division, Precision Products Department, Electro-Mechanical Division, Hallicrafters, Wilcox Electric and Page Communications.

Seminar chairman was Seth Lewis, supervisor, Engineering Reliability and Component Engineering, Electronics Division, and SRM Committee chairman was W.W. Harter, manager, Safety, Reliability and Maintainability, Aircraft Division.

Energy Conservation — E

Daylight Savings Time

In a step that could save up to one per cent of the energy expended annually for electricity and heating, President Nixon signed the legislation placing the nation on year around Daylight Savings Time at 2 a.m., Sunday, Jan. 6. The measure will keep the country on Daylight Savings Time until early 1975.

All personnel are reminded to set their clocks ahead one hour.

Learn to Read Your Meter

That electric meter on your back wall is a scoreboard. And the only way to tell the score in our attempt to beat the electrical energy shortage is to learn to read that meter, and make comparisons periodically.

For example, by taking readings of your electric meter hourly throughout the day, you can determine your peak periods of usage, that is, the hours of the day the meter is running the fastest, and make a concentrated effort to cut down on your use of electricity during that period.

Referring to the drawing below, your first reading at 6 a.m. may be 4372. At 7 a.m., with the bedroom, bathroom, kitchen, hall and children's room lights; the bathroom heater and exhaust fan; the range exhaust fan; the electric toaster; the juicer, radio and/or television and other appliances turned on; that reading may have climbed to 4375. At 8 a.m., with the family settled, the kids outside and the adults gone to work, the reading may have changed little from 4375.

This indicates that 6 a.m. to 7 a.m. is a period of peak usage, and a prime period for a cutback in electrical usage.

Are the exhaust fans necessary? How about the bathroom heater? And all those lights? Is anyone really watching television or listening to that radio?

The answers to these questions applied to all the peak periods during the day can tell us whether we are wasting energy.

By reducing our daily average use of electricity 15 per cent we can achieve the goal set for overall electrical energy usage reduction.

And, according to the power companies, our success in achieving that goal will determine whether we will be forced into periodic electrical blackouts.

(TIME)	METER FACE	(READING)
6:00 AM		4372
7:00 AM		4375
8:00 AM		4375

The importance of energy conservation was emphasized Nov. 26 when a Northrop Corporate Policy Directive on Energy Conservation (CPD No. 75) was issued by Thomas V. Jones, president.

The directive reads, in part:

"It is the policy of Northrop Corporation that the conservation of the nation's energy resources be promoted and supported.

"Each division, subsidiary, and Corporate office shall establish, publicize, and maintain an Energy Conservation Program to encourage each employee and member of management to adopt the strongest energy conservation measures possible at work, on the road, and at home.

"Each employee and member of management shall be expected to provide his complete cooperation with the objectives and implementation of the Corporate Energy Conservation Program."

As a result of this policy, a comprehensive conservation program is already under way, and plans are in preparation for more extensive reductions in energy usage.

Each Northrop Southern California operation is establishing car pools, and, where feasible, commuter bus service, to conserve gasoline.

Other activities, by division, include the following:

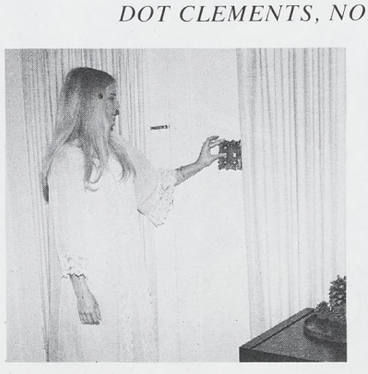
Electro-Mechanical

Skylights have been added at the Anaheim facility, consisting of plastic bubbles permanently fixed over open areas in the roof. The skylights now furnish 80 foot candles of illumination to the work area, the same amount furnished by artificial light. Total work area illumination is supplied by the openings during four hours of a sunshiny day, and half the necessary light in the early morning and later afternoon period. On cloudy days they furnish about half the needed illumination during the brightest hours.

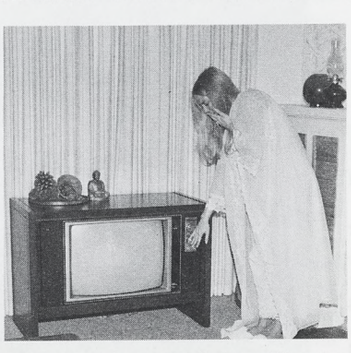
Heat treat tanks used for metal processing are now covered, and heated tanks that must remain open have been covered with layers of floating ping pong balls to hold in heat. Balls are easily brushed aside to permit trays of metal parts to be

DOT CLEMENTS, NORTHROP DATA PROCESSING, DEMONSTRATES HOW EACH OF US CAN

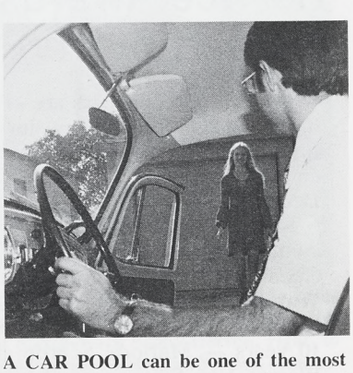
DOT TAKES time out from the pool to read her electric meter in order to determine peak electrical loads.



TURN THOSE lights out if you're not going to use them. Every light left on wastes electricity.



YOU CAN'T watch television if you're asleep. Turn it off first before going to sleep.



A CAR POOL can be one of the most effective ways to conserve gasoline. Fred Locarnini drives.

Everybody's Business

immersed and removed.

Heating thermostats have been reduced to 65 degrees; air conditioning thermostats raised to 75.

When necessary lights raise room temperatures in the cooler morning hours, doors are opened rather than resorting to air conditioners.

Timers on the air conditioning system shut it down from 6 p.m. to 6 a.m.

Northrop is leading energy conservation efforts in Orange County. Merrill Skilling of Northrop is chairman of the City of Anaheim conservation program involving 125 of the largest energy users, including Disneyland and Autonetics. The committee is striving for a coordinated effort to avoid peak load and emergency problems.

Ventura

Ventura Division initiated a program in early 1973. They have reduced electrical energy requirements approximately 4 per cent below average 1972 levels, and the goal is to increase that saving to 8 per cent by the end of the year and to 13 per cent by the first of next year.

Electronics

The division now uses outside air in lieu of air conditioners whenever possible.

Special purpose generators are not allowed to run continuously, and are being used only as needed in the performance of tests.

Water heater thermostat settings have been lowered to 125 degrees.

Fan motor RPMs have been reduced.

Studies of intra-plant traffic requirements are under way to get higher productivity from less vehicles.

External lights have been reduced to minimum security levels.

Checks are performed at the end of second shift daily and on weekends to shut down all unnecessary electrical equipment.

Cooling tower fan motors have been changed from constant running to intermittent service as needed.

Plans are to rearrange working schedules to drastically reduce general building operations on weekends.

(See ENERGY, page 7)

Driving Experiments

An interesting experiment recently took place in West Germany. Two identical cars were fitted with instruments that measured every detail of the trip, and sent out on 1000-mile journeys. One driver was told to avoid risk and move as the traffic flow permitted; the other was to hurry.

THE SCORE?	THE 'SLOW' DRIVER	THE 'FAST' DRIVER
Distance Covered	1000 Miles	1000 Miles
Elapsed Time	20 Hrs., 43 Min.	20 Hrs., 12 Min.
He Passed	645 Cars	2004 Cars
He was Passed by	142 Cars	13 Cars
He Used His Brakes	652 Times	1339 Times

THINK ABOUT THIS — The "fast" driver:

Saved only 31 minutes! out of 20 hours!
Had 3 times the brake and tire wear!
Passed 3 times as many cars!
Had 3 times the accident exposure!
Suffered 3 times the wear and tear on the driver himself!

AND AGAIN!

Unconvinced, West Germany's biggest motor club tried it over an 800-mile run. The fast car took 16 hours and 52 minutes; the slow one took only 21 minutes longer.

—ABA Accident Prevention Bulletin No. 79

NAVION LANDING AT HAWTHORNE DAILY IS NOT ON PLEASURE TRIP

It may appear to be a daily pleasure trip, but the Navion full of Northrop employees that lands at Hawthorne Airport every morning replaces five cars, eliminates freeway delays, and cuts down on exhaust fumes due to idling engines in packed traffic.

Birch Ford, Joe Noyes, Rosemary Hussey, Ross Anderson and Marie Tully have been flying together for about five months, but Rosemary has been a member of various flying commuter groups since 1968, Marie started in 1969.

Seats are never empty due to absences, as Rudy Seemann, Roger Barquist and Ray Turner are on a standby list, ready to leave their cars home and get above it all.

IN THE COCKPIT are Birch Ford, pilot, Joe Noyes and Marie Tully. Outside the plane, Rosemary Hussey and Ross Anderson, also pilot.

Riggins Named Conservation Coordinator

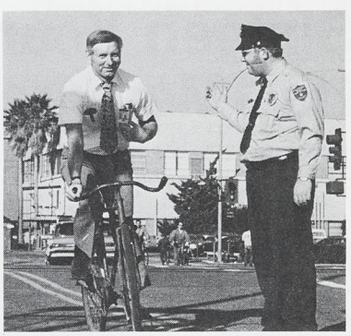
H.E. Riggins, Corporate vice president-Materiel and Facilities, has been appointed coordinator of the Northrop corporate-wide energy conservation program by Thomas V. Jones, president.

Mr. Riggins will be responsible for coordinating the activities of Energy Conservation Program administrators to be appointed by each division general manager and subsidiary president.

Mr. Riggins

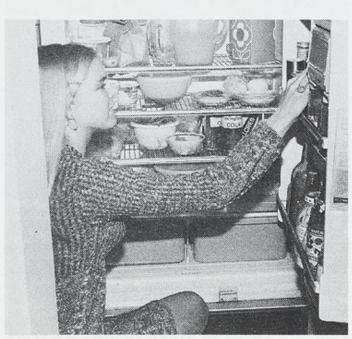
Initial activities will be directed at ensuring that the need for energy conservation is understood and encouraged by each employee and member of management, according to Mr. Riggins.

"Industrial Engineering, Facilities Engineering, Industrial Relations, Procurement, Business Systems, and similar organizations will be expected to implement energy conservation procedures as rapidly as possible," said Mr. Riggins, "and I am sure that each employee will cooperate fully with the objectives and the implementation of our programs."



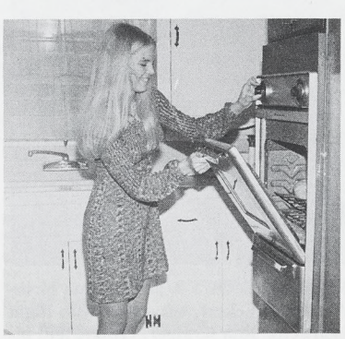
THIRTY-FOUR years ago George Larsen, Aircraft, started riding this bicycle to work. According to George, at 10 cents a mile he has saved $10,000!

OF US CAN CONSERVE ENERGY AT HOME. DAVE SALDANA PHOTOGRAPHED THE SERIES.



IT COOLS the kitchen (Dot, too); but holding the refrigerator door open wastes energy.

THAT WATER won't cook — when it starts to boil, turn off the heat. Water stays hot for quite awhile.



"A WATCHED bird never cooks" — at least not any faster. Opening the oven door just to peek wastes gas.

DRAPERIES are excellent insulation. Close them to keep the cold out — or open them to warm up a room.

Burke Finds One Drawback to Being Santa Claus-No Spaghetti

Wet pants, embarrassing questions, beard pulls, some tugs at the heart — and *no* spaghetti are all part of the job of being Santa Claus, according to John Burke, Electro-Mechanical Division, who has been doubling for the jolly man in the red suit for 20 years.

John began Santa Clausing when he was with the U.S. Navy in Japan. One Christmas he and two shipmates played Santa to some Japanese children. Their joy did something to him. As a result every Christmas since, has found him in a Santa suit wherever he might be.

This has included singing Christmas carols in the streets of Garden Grove, his home, making Santa house calls in North California while on vacation, playing Santa at Northrop's Children's Christmas parties, being Santa at charity affairs, and — for the past two seasons — as a department store Santa on weekends.

Wet pants, he reports, are part of the job. And it is not always babies. Once a small boy was so excited he lost control. "You don't want any child to associate Santa with anything embarrassing," John said. "So I had to grab a newspaper lying nearby and hold it so no one in line could see what happened and laugh at him. Then I maneuvered him so his back was to the crowd when he left and they could not see his wet pants — and my wet trouser leg."

Many of the children are skeptical and one little girl gave him the third degree. He is careful never to tell them that he is the real Santa Claus. "I never lie to a child," he said. "I try to find some way to worm out of it. When one girl asked if I was the real Santa, I put out my hand and asked her to feel of it. 'Does that feel real?' I asked. She admitted it did. So I said, 'Well?' and quickly changed the subject."

Santa's Beard

Pulling Santa's beard is also a favorite trick of some boys. For this reason John glues his beard on instead of hooking it around his ears as some professional Santa's do.

John never does a Santa job without finding some incident that tugs at his heart. Last year it was a girl who had no muscular control at all. She was wheeled up to see Santa in a wheelchair. Because of her complete limpness, he had great difficulty getting her out of the wheelchair and then hold her on his lap. He couldn't ask for help since he felt that would spoil his Santa image. Santa should be self-sufficient. He finally managed. "And the expression on her face as she sat on Santa's knees for the first time made me feel good all the rest of the day," he said.

He feels a particular challenge with children who are afraid to come up and sit on Santa's knee. It is his pride that he can break down even the toughest reserve.

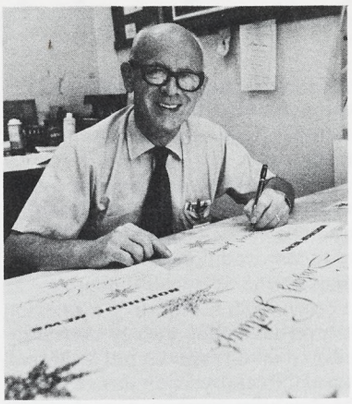
Last year there was one little girl who just refused to give in. John, who doesn't take defeat easily, followed her around the store during the relief period he gets from sitting. As her mother shopped, John kept peeking at her with hand puppets over the top of counters.

He finally got her to giggle. With this opening he bent over and whispered in her ear: "Rudolph would dearly love to have a picture of you with me to hang in his stable at the North Pole. How about it?" How could she refuse? Her mother said this was the first time any Santa had ever gained her daughter's confidence.

Santa's Image

The only drawback to being a Santa Claus, John claims, is that he has to forego his favorite food during the Christmas season. This is hamburgers with onions and spaghetti with a heavy garlic sauce.

"It just doesn't fit Santa's image for the children to have to hold their noses while they sit on his lap," he said.



THIS YEAR'S Northrop News "Christmas card" cover was designed by Doug Finch, Ventura Division Arts and Graphics. Prior to joining Northrop in 1956, Doug worked 22 years for a greeting card company. Upon retirement "in a couple of years," he plans to paint and perhaps teach.

Sixteen Year Old Youth Has Memorable Birthday

John Eckert, 16-year-old son of John A. Eckert, avionics engineer, Aircraft Division, had a very memorable birthday in November when he obtained his drivers license at the Department of Motor Vehicles and later the same day soloed out of Hawthorne Airport for his student pilot certificate.

Young John got interested in flying 10 months ago because, as he put it, "It's a mobile generation so I thought it would be good to know a lot of ways of getting around."

A sophomore at Westchester High School, John actually was qualified for his solo flight several months ago, according to his instructor Ron Kramer, senior research analyst, Aircraft Division, who has taught several students to fly in his Cessna Model 150.

"You would really be surprised how fast and how well John and my other young students can learn, they seem to have more natural talent for it when they're young," Ron said.

Among young John's other interests are being an Explorer Scout in Emergency Service Group No. 604 organized to help the community in cases of emergency or disaster, coin and stamp collecting, and the collecting and study of all types of guns.

For John senior, it has all been a matter of encouragement at the right times and of course, financial support for the lessons.

ROUNDING OUT A perfect 16th birthday, John Eckert, left, poses with flight instructor Ron Kramer, center, and his father John A. Eckert, after his solo flight. Earlier in the day, young John had obtained his initial drivers license.

NRC SKI CLUB TO HEAD FOR AUSTRIA

The NRC Ski Club is heading for Innsbruck, Austria, in the heart of the Alps. The area has 24 ski lifts, 62 miles of runs and is the site of the 1976 Winter Olympics.

Departure will be from Los Angeles International Airport on Jan. 24 and return Feb. 12.

The package includes round trip jet flight from Los Angeles to Munich, Germany; bus transfer from Munich Airport to the Igls Hotel in Innsbruck; seven nights lodging with meals; and a ski lift pass valid for seven days unlimited use of all lifts.

Total cost for all that is $428 per person, including all taxes and service charges.

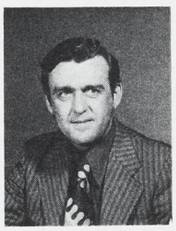
If you want to bring along a non-skier, he can either have the round trip jet flight only for $275; or the complete ski package.

Make checks payable to Northrop Recreation Club and send to John Rufino, Electronics Palos Verdes, Orgn. T4633, Zone T60.

Credit Union Names Assistant Manager

Marvin Peiffer has been named to fill the post of assistant manager of the Northrop Hawthorne Credit Union, according to Harvey Cook, president of the Credit Union.

Mr. Peiffer comes to Northrop from the Walter Reed Army Medical Center Federal Credit Union, Washington, D.C. He has served as manager and assistant manager in credit unions throughout the Washington, D.C. area since 1961. Mr. Peiffer was also employed by the Washington, D.C. Credit Union League in the Audit and Marketing Divisions.



Mr. Peiffer

Mr. Peiffer attended American University and Benjamin Franklin University in Washington, D.C. majoring in accounting and law.

TWIN TROPHIES awarded for the most identical twins on parade in the Gardena Parks and Recreation Dept. annual baby contest, undergo double examination by Scott, left, and Stephanie Smith, two-year-old twins of Dave Smith, Aircraft Division. The twins, born Christmas Day 1971, also received awards for plumpest baby and baby with the curliest hair.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Motorcycle, 1970 Honda CB450, front d/brake, semi-chopped, $625. 213-293-4675.

Chrysler 300, 1969, 4-dr. h/top, p/s, p/b, a/c, AM radio, $800. 213-596-9748.

Ford, 1969 LTD, stereo radio, a/c, $1000. 213-371-6292.

Ford, 1966 Fairlane GTA, 2-dr., auto. trans., p/s, $650. 213-326-1021.

Motorcycle, 1972 Honda 450, high rise bars w/6'' fork ext., d/brakes, $850. 213-830-0294.

Mercury, 1972 Montego MX, a/c, pwr. d/brakes, $2495. 714-531-6738.

Pickup, 1971 Ford ¾-ton, 4-spd., air, dual gas tanks, w/1973 Harvest camper, 8' cabover w/elec. water pump, sleeps 5, used once, $3600, consider camper sep. 714-524-5756.

Mercury, 1969 Marquis, 1-owner, 36,700 act. mi., 6-way seats, FM-AM stereo radio, a/c, $1650. 213-641-3333.

Tempest, 1963 station wagon, needs tailpipe, 4-cyl., $200. 213-644-3826.

Ford, 1968 LTD, new tires & brakes, $950. 213-545-1672.

Barracuda, 1967, 57,000 mi., $1100. 213-325-5484.

Motorcycle, 1971 Honda, 100 SL, $250. 213-679-0961.

GTO, 1966 convt., 389, 4-spd., $200. 213-882-7582.

Motorcycle, 1972 Honda CL-350, fwy. foot bar & back rest, service manuals, $645. 213-291-0025.

Triumph, 1961 TR3, $700 put into restoring, $595. 213-329-9510.

Ford, 1967 LTD 4-dr. h/top, all power & air, $500. 805-495-3381.

Volvo, 1972 142E fuel injection, 4-spd. stick, air, $3700. 714-778-4517.

Volkswagen, 1960 Ghia roadster, $175. 213-679-6672.

Pontiac, 1961 4-dr., V-8, $115. 213-375-1475.

Blazer, 1972 Chev., 4 w.d., many extras, $3900. 714-522-2011.

Oldsmobile, 1967 Delta 88, 4-dr., fact. air, all extras, 65,000 mi., $750. 213-889-0888.

Pontiac, 1967 LeMans, small V-8, a/c, p/s, $150. 213-375-0943.

Motorcycle, Hodaka Ace 100, street legal, all access., $275. 714-735-2724.

Motorcycle, 1972 Suzuki 90 cc, street & dirt, $300. 213-325-3954.

Motorcycle, 1970 American Eagle, 405 cc MX, Husky parts, $450. 213-679-4863.

Mustang, 1968 convt., V-8, auto., p/s, r/h, $1200. 213-326-7513.

Motorcycle, 1970 Yamaha 175 Enduro, $275. 213-374-8608.

Motorcycle, 1973 Maico 250, 25 hrs. old, $1500 invested, $900. 213-373-6035.

T-Bird, 1966, full power, 8-track stereo, $450. 213-398-1552.

Porsche, 911 T, auto., alloy whls., $5800. 213-390-3157.

Ford, 1969 van conversion, r/h, a/c, 8-track tape deck, stove, ice box, rebilt. eng., $2800. 213-372-1048.

Plymouth, 1969 Roadrunner, 4-spd., chrome mags, $895. 714-737-2742.

Dodge, 1969 Charger, f/p, auto. trans., fact. a/c, 318 eng., $1700. 213-681-7898.

Motorcycle, 1971 DKW 125, Don Vesco eng., motoplat ignit., $550. 213-378-9614.

Miscellaneous For Sale

Recliner, swivel, $75. 213-863-3758.

Bed, double, $30. 213-675-7204.

Drum Set, complete, 7-pc., extra access., $150. 213-371-5308.

Ski Pants, ladies, matching jacket, size 11, worn once, $25. 213-860-2362.

Stove, gas, apt. size, white, $25. 213-371-4285.

Table, 4 chairs, wood grain never mar top w/bronze legs, $20. 213-675-5695.

Studio Couch, burgundy vinyl, $30. 213-328-2046.

Reading Lamps, 3-way, modern, $25. 213-530-3521.

Coffee Table, walnut, 3' x 5', $50. 213-377-6435.

Salver, depression glass, ritz blue, American Sweetheart pattern, 12'', $90. 213-670-7940.

Washing Machine, wringer-type, Maytag, $30. 213-295-1750.

Miscellaneous For Sale

Handgun, Colt Trooper, 357 mag., 200 rds. ammo., holster, $135. 213-370-4475.

Sailboat, Columbia 26 Mark II, 7½ h.p. Mercury, $6500. 213-379-8067.

Table Saw, 8'' tilting arbor w/¾ h.p. motor, $85, other shop equipment. 213-370-3482.

Bicycle, boy's, 5-spd. Stingray Schwinn Applecrate, $70. 213-375-5360.

Hutch, solid maple, near new, $49. 213-370-0824.

Scooter, lge., $7. 213-675-1057.

Rifle, 300 Savage, lever action, shells & case, $85. 213-674-5953.

Ping Pong Table, reg. size, collapsible, w/equipment, $20. 213-373-7953.

Camper, 10½' cabover, many extras, $550. 213-645-3592.

Spear Gun, $15. 213-834-3290.

Bicycle, girl's Schwinn 3-spd., $45. 213-483-6789.

Lamp, Desert Air, $35. 213-675-6020.

Freezer, 16 cu. ft. upright, RCA Whirlpool, $75. 714-985-8759.

Camper Shell, Gem Top, fits '64 to '67 El Camino, $140. 213-679-3492.

Ski Boots, Rieker, American size 11, near new, $35. 213-679-0010.

Desk, office-type, locks, full drwrs., $40. 213-324-3625.

Bicycle, Schwinn racer, 26'' 3-spd., $50. 213-322-5130.

Bed, king size, posturepedic mattress, box spring, frame, $75. 213-675-4597.

Snow Chains, fit most compact cars, $5 pr. 213-676-6449.

Skis, Head 360, 190 cm, $50. 213-665-9431.

Bedroom Set, 4-pc., modern, gray, $100. 213-675-5832.

Camera, 35mm, Argus C44, wide angle & telephoto lenses, $75. 213-676-9748.

Dinette, chrome table, 4 chairs, $25. 213-370-9451.

Ski Rack, for Porsche 912, & tire chains, used once, $15. 213-780-7476.

Bicycle, girl's Schwinn Stingray, $30. 213-323-3202.

Snow Tires, 2 8.55x15 w/5-bolt Chev. rims, $60. 213-672-1036.

Target Pistol, Smith & Wesson, .22 cal. CO_2 single shot, adj. sights, trigger pull & pwr. control, $25. 714-774-3340.

Boat, Pirelli, inflatable, never used, $590. 213-457-2110.

Go-Kart, 3½ h.p. Briggs & Stratton, many extra parts, $35. 213-645-4697.

Tires, 4 AR 78-13 B. F. Goodrich belted radials, less than 600 mi., $30 ea. 714-772-0794.

Refrigerator, Frigidaire Frostless, coppertone, lge. freezer, $65. 213-676-3738.

Living Room Tables, $7.50. 213-677-6294.

Pup, silky terrier, male, AKC reg., shots, $150. 714-637-7662.

Water Heater, Republic, never used, 30-gal., 10-yr. guarantee, $60. 213-532-0015.

Pups, Doberman Pinscher, AKC papers, blacks, reds, males & females, all shots, $100 — up. 213-324-0120.

Refrigerator, lge., coppertone, self-defrosting, $50. 213-863-3900.

Train Set, N gauge w/extra track, $15. 213-326-5979.

TV, color, 21'' RCA console, wood cab., $95. 213-644-2831.

Bedspread/Draperies, matching twin-size, 4 panels 62'' l.x40½'' w., blue w/P-nuts characters, wash/wear, $15. 213-675-7357.

Slot Car Set, latest mod. AFX, 33' track, 5 cars, gun controls, table mounted, $55. 213-430-8378.

Stereo, G.E. Early American style, AM/FM, phonograph on table w/record storage, $50. 213-781-7418.

Dinette Set, 6-pc., 60x42 oval, marble & wood grain, Virtue Bros., $30. 213-379-4211.

Guitar, classical, Orlando, nylon string, $80. 213-679-3508.

Bedspread, king size, gold, yellow, green, white, never used, $25. 213-325-5245.

Shotgun Barrel, Remington 1100, 28'', full choke, vent. rib, $50. 213-645-8278.

Clarinet, B-flat, $75. 213-324-0941.

Lathe, Craftsman, 12'', many extras, $400. 714-539-5812.

Wanted To Buy

Drafting Table, used. 213-783-3645.

Baseball Cards, prior to 1965, for boy, age 11, who lives baseball & has $3 to invest. 213-545-6211.

Baby Crib, used. 213-328-7534.

Personals

I wish to thank my friends of Northrop Electro Optical Div. for my retirement party & many gifts. Your thoughtfulness is greatly appreciated. MR. & MRS. MARCEL E. THERSSEN.

MERRY CHRISTMAS from the Northrop News staff. Center: Rosemary. Clockwise: Wanda, Tom, Joe, Peter, Ivy and Park.

ENERGY CRISIS — Real Concern

(Continued from Page 5)

Aircraft

A commuter bus service for employees has been established.

New multiple lighting systems in many office areas control light levels consistent with assigned tasks.

Division goals are a 10 per cent reduction by June 1974; a 15 per cent reduction by December 1974; and a 25 per cent reduction by December 1975.

Facilities and equipment will be modified to assure more efficient operation; and a formal program has been established to keep all equipment in top operating condition.

Equipment usage has been rescheduled to minimize peak demand via staggered work shifts.

Plans have been prepared for the temporary curtailment of non-critical activities during periods of impending power shortages.

Each management member is anxious to hear the comments and suggestions of Northrop people for conserving energy.

Personals

I wish to thank all of my Northrop friends for their kindness & sympathy in the loss of my mother. ANNE C. DALY.

My sincere thanks to my friends & co-workers at Palmdale for my cakes, gifts & cards for my retirement. JIM HAMILTON.

Thanks to all my friends at Northrop whose cooperation & friendship made it possible for me to have a happy & successful career. LYLE CLAYPOOL.

I wish to thank all my friends & co-workers for the floral tribute, cards & kind expressions of sympathy on the passing of my husband, Paul ''Poochie'' Buracchio. FRANCES BURACCHIO & FAMILY.

Many thanks to all my friends & co-workers at the Electronics Div., for the lovely flowers, gift & get well wishes during my recent illness. MARGARET OBRIGHT.

My family joins me in our most sincere thanks to our friends for their expressions of sympathy on the passing of my wife & their mother, Hazel. WILLIAM F. McGRATH.

Thank you to those who sent flowers, cards & notes of sympathy in our time of sadness on the passing of our loved one, Russell D. Munsen. MARGARET MUNSEN.

We wish to express our sincere appreciation to all our friends at Northrop for their floral tributes & messages of sympathy over the recent loss of my mother. HARRY ANDERSON & FAMILY.

Ride Offered, El Toro, Laguna Hills area to Hawthorne, 7 a.m.-3:42 p.m., Aircraft ext. 1729, 714-586-2344.

We wish to express our deepest appreciation for the kindness & concern given to us during Dick Donnici's illness & death. MRS. R. G. DONNICI, THE DONNICI FAMILY, THE O'LEARY FAMILY.

Ride Wanted, Centinela & Forence, Inglewood to NRTC Bldg., 7:18 a.m.-4 p.m., Aircraft ext. 1191, 213-674-4563.

Ride Needed, 8 a.m.-4:42 p.m. from Alhambra or Pasadena area, Aircraft ext. 1535, 213-281-0817.

Personals

I wish to express my thanks & appreciation to my Northrop friends for their kindness & sympathy on the passing away of my mother. MARIAN HODGES.

Join our carpool, San Gabriel Valley to Electronics Haw., 8 a.m.-4:45 p.m., ext. 647, 213-266-3999.

Riders Wanted, for carpool from South Pasadena/San Gabriel area, Electronics Haw. ext. 567, 213-441-2362.

Wish to join carpool, 190th & Inglewood Ave. area, Redondo-Torrance, 8 a.m.-4:42 p.m., Aircraft ext. 4751, 213-371-2664.

Desire to pool rides from South Coast Plaza area to Electro-Mechanical Division, 8 a.m.-4:45 p.m., Anaheim ext. 1071, 714-545-2153.

We want to express our sincere thanks to all our friends at Northrop for the flowers, sympathy & help during the loss of our beloved daughter & sister, Donna. DARLENE & JOSE OJEDA, JEAN & GREG RICHARDSON.

Car Pool, west end of Beverly Hills to Hawthorne, 8:15 a.m.-5 p.m., NRTC ext. 2711.

Riders Wanted, vicinity of San Diego & Santa Monica Fwy. intersection, Aircraft ext. 2245.

Ride Offered, 7:30 a.m.-4:23 p.m., from vicinity of Hawthorne & Torrance Blvds. to Plant One, Aircraft ext. 2196, 213-371-2705.

Car Pool or ride wanted, 8 a.m.-4:42 p.m., from Olympic & Spalding, Beverly Hills, Aircraft ext. 1858, 213-553-7960.

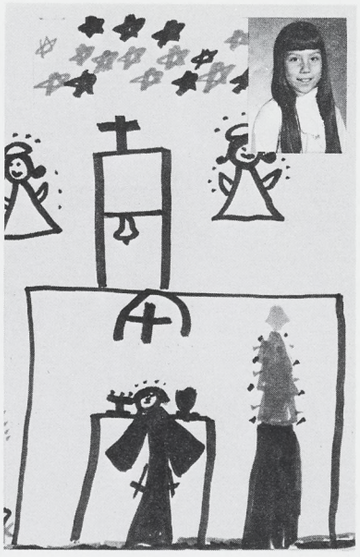
Have 8-pass. bus-van, share rides w/7 from Torrance area, pickup on Hawthorne Blvd. from 226 St. to 190 St., east to Prairie Ave. to Gate 10, 7:45 a.m.-5 p.m., Aircraft exts. 1018, 2521, 213-326-3075.

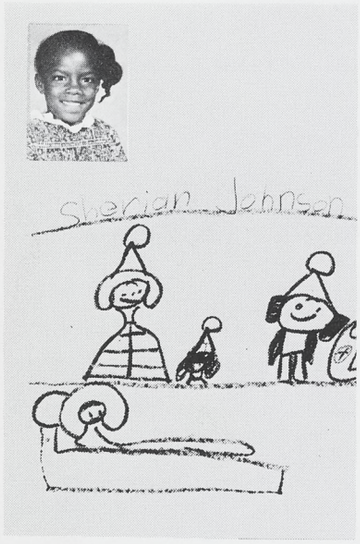
For Sale Or Trade

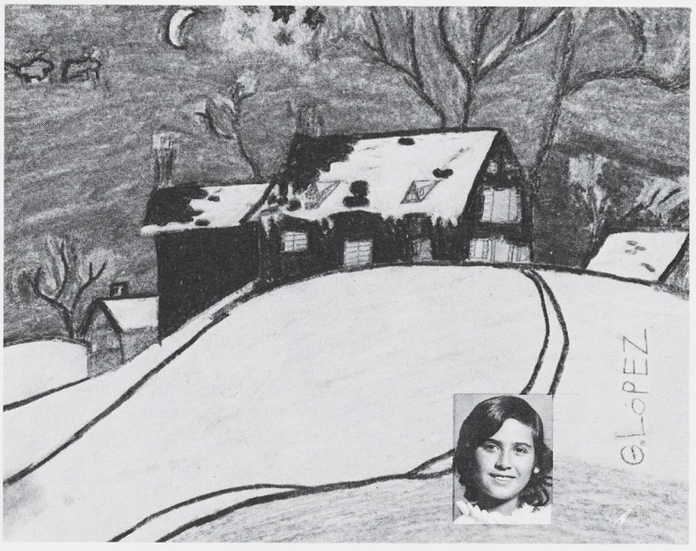
Blue Chip stamp books, $2 per book or trade for S&H Green Stamp books. 213-676-0758.

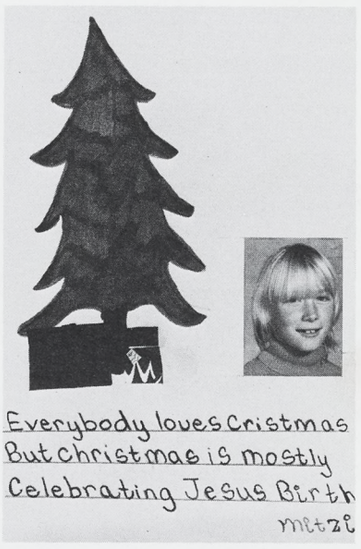
TV, RCA 21'' color table mod. w/cart, $235 or trade for 16'' to 19'' color portable w/cart. 213-371-5072.

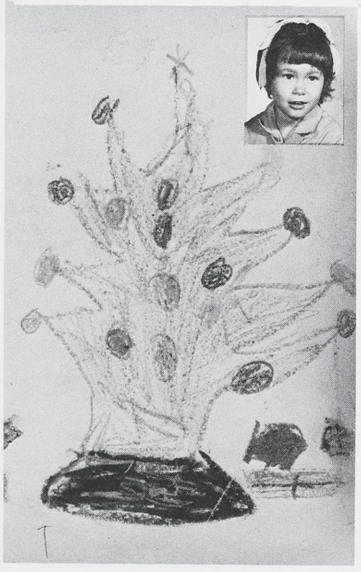
Christmas Seen Through Eyes of Little People

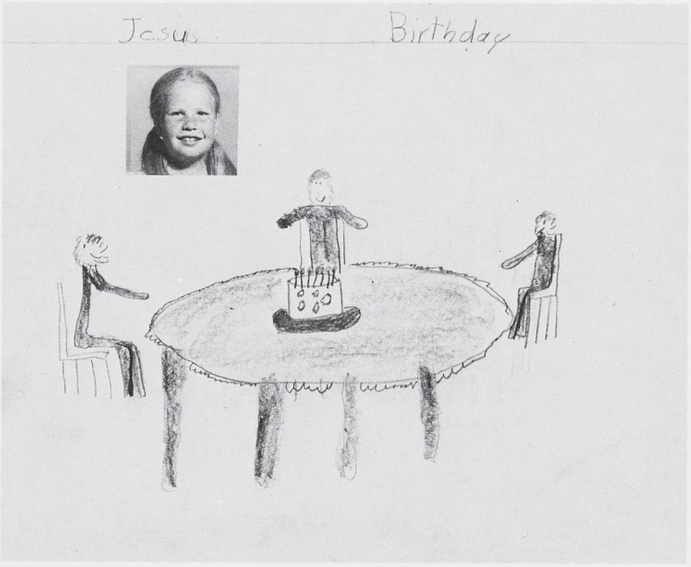












THERE IS ALWAYS a greal deal of excitement during the Holiday Season, especially among children who await Christmas with even greater anticipation. This year, we have asked parents throughout Northrop for a drawing of what Christmas means to their child. From top to bottom, Steven, age 7, son of Millie Gaudreau, PPD; Linda, 7, daughter of Charles Simmers, Ventura; Rosemarie, 8, daughter of Antonio Arrendondo, Northrop Architectural Systems; Sherian, 6, daughter of Sherman Johnson, Aircraft; Gloria, 9, daughter of Bernardo Lopez, Northrop Hueneme; Mitzi, 10, daughter of Carolyn Bouffard, Corporate; Patricia, 5, daughter of Regina Don, Electronics; Peggy, 8, daughter of Terry Certain, Electro-Mechanical; and Angela, 8, daughter of David Fisher, Mariposa.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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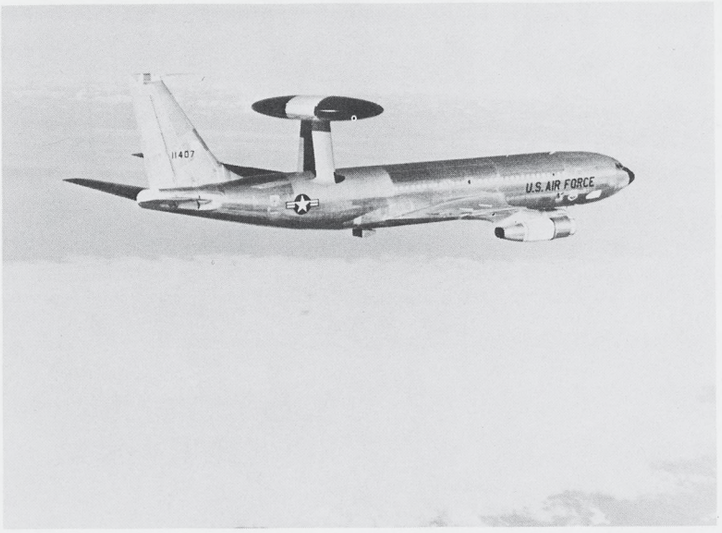


THE U.S. AIR FORCE'S AIRBORNE WARNING AND CONTROL SYSTEM AIRCRAFT

Sixteen Earn Awards

Sixteen division members are beginning the New Year on a light note as they celebrate anniversary dates with Northrop during the month of January.

Martha Chapman and Lucille Anctil, Palos Verdes, are joined by Charles Lyons, William Brown, George Schmitt, and Clarence Hibbs, Hawthorne, in observing their 20-year service anniversaries.

The lone 15-year service award recipient is Mario Artavia, Palos Verdes. Ten-year service awards went to Richard Johnson, Palos Verdes, and Clyde Oman, Hawthorne.

Five years' service was completed by John Yacabowich, Phillip Zulueta, Joan Duncan, and Ranjit Roy, Palos Verdes; Katherine Piercey, Hawthorne; and Patricia Meahan and Albert Piehl, Berkeley Scientific Laboratories.

Four New COM-BUS Routes Now Running

Four new COM-BUS routes are commuting from outlying areas to Hawthorne. If you are interested in joining a group from any of the areas noted below, please contact the Bus Captain of the route.

West San Fernando Valley — 7 a.m.-3:42 p.m. work shift, via Devonshire St. and Canoga Ave., Topanga Canyon Blvd., and Ventura Fwy. Bus Captain — Jim Nemo, ext. 2754 or 213-881-7658.

Thousand Oaks, Malibu, Santa Monica — 8 a.m.-4:42 p.m. work shift, from Thousand Oaks via Ventura Fwy., Malibu Canyon, Pacific Coast Hwy., Santa Monica and San Diego Freeways. Bus Captain — Bob Wulf, ext. 2826, or 213-454-7585.

East San Gabriel Valley — 8 a.m.-4:42 work shift, from Covina, west on San Bernardino Fwy. to Baldwin Ave., north to Huntington Drive, west to Fair Oaks, north to Pasadena Fwy., and south to Hawthorne. Bus Captain — Earl Ross, ext. 2130, or 213-286-6018.

West San Fernando Valley — 8 a.m.-4:42 p.m. work shift, from Topanga Canyon Blvd. and Canoga Ave., via Topanga Canyon Blvd., to Ventura Fwy. Bus Captain — Don Biedermann, ext. 4221, or 213-341-4438.

Skiers Planning Feb. Swap Meet

The NRC Ski Club will hold a 'Ski-Swap Meet' Tuesday, February 19, at 7 p.m., in the NRC Clubhouse, Hawthorne. Bring your old ski accessories by and have a good time. For information contact Rick Crane, ext. 1780, Aircraft, or John Rufino, ext. 538, Palos Verdes.

First AWACS Navigation System Sent to Boeing

The Electronics Division has completed acceptance tests and shipped on schedule to the Boeing Company the first navigation and guidance system for the U.S. Air Force Airborne Warning and Control System (AWACS) Aircraft.

Northrop, under contract to Boeing, prime contractor for the AWACS Program, has responsibility for the modification, production and testing of all AWACS navigation and guidance equipment. The Electronics Division will produce eight full systems in the development stage of the program.

The AWACS navigation system consists of a Northrop Omega AN/ARN-99 radio navigation set, Delco Carousel IV Inertial Platform and a Ryan AN/APN-200 Doppler Velocity Sensor.

AWACS, originally awarded to Boeing in mid-1970, provides airborne high and low-altitude surveillance over both land and water, and features a survivable warning and control system. The system, utilizing an existing commercial jet transport that may be placed anywhere in the world in a matter of hours, will manage other high priority defense resources such as tactical fighters, interceptors and support aircraft so that they can be used more effectively.

ASK TONY

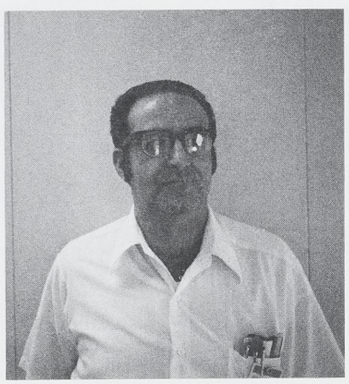
Safety Glasses Protect Sight

Tony Musuraca, Manufacturing Process Laboratory, Hawthorne, had just turned on the flow solder machine in the lab Monday morning, December 17, when suddenly molten solder spurted into his face and on his abdomen.

Fortunately, however, Tony was wearing safety glasses, and rather than being blinded in his left eye, he received minor burns on his lip and abdomen and a shiny blotch on the left lens of his glasses.

Solder measures up to 700 degrees Fahrenheit when it comes out of the machine and as Tony attested later, ". . . the glasses saved my sight."

Tony will be entered into the Wise Owl Club of America which is sponsored by the National Society for the Prevention of Blindness. Membership is awarded to employees and students whose eyesight has been saved by wearing eye protection at the time of a potentially blinding accident.



TONY Musuraca wears his solder-spattered safety glasses to show how they saved him from being blinded in the left eye. Hardened solder gleams in the light.

College Credit Courses Offered through Aircraft Division Training Dept.

El Camino College credit courses in "Oral Communications Techniques" and "Developing Supervisory Leadership" will be offered at the Aircraft Division Training Center, Hawthorne, beginning Monday, February 4.

Ralph Carey, Training coordinator, will instruct the courses. Registration will continue through January 31. For information contact Norma Conrad, ext. 4033, Aircraft.

Management Club To Install Officers

The Management Club will install its new board of control for 1974 at the February 20, meeting at Lococco's in Manhattan Beach. Social hour will begin at 5 p.m.

The elected officers for 1974 are Tom Jackson president; Frank Merlino, vice president; Jackie Ockerman, secretary; Chuck Morgan, treasurer; and Larry Lee, sergeant-at-arms.

Graduates Complete Programming Training

Recent college graduates completing programming training are being introduced to an IBM 3270 CRT Terminal and hardcopy printer by T. Yamashita, director of Programming, Northrop Data Processing.

The CRT Terminal is a new addition to the IBM Terminal equipment to be used by NDP programmers in the design and development of computer programs. The unit, which is located at Hawthorne, is connected by telecommunication to NDP's large 370/165 computer system located in the Engineering Science Center.

The use of this new technology is another step taken by NDP management to improve efficiency of operation and to help expedite the development of computer applications for management decision-making.

"These new hires are obtaining training to increase their expertise in analyzing user specifications and performing the design, coding, test, and implementation of computer applications," Mr. Yamashita said.

The new CRT Terminal will be used for direct interaction with the large high speed computer.

RECENT college graduates are being introduced to an IBM 3270 CRT Terminal and hardcopy printer as part of their training with Northrop Data Processing. From left to right are T. Yamashita, director of Programming, Nancy Kern, Lois Yoshimoto, John Blindbury, Barry Manning, Kent Besinque and Norm Britting. Not pictured, Joanne Strauss.

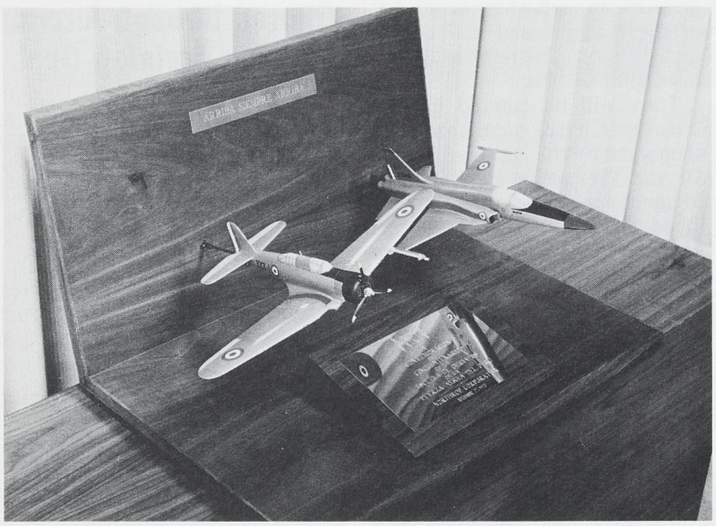
Northrop Participates In Anniversary Celebration

At the invitation of the Peruvian Air Force, Northrop was a participant in the anniversary celebration of the Peruvian Air Force Academy which marked its 50th year in November. Representing Northrop was Stephen B. Hicks, Customer Requirements specialist, Latin America, Aircraft Division.

Mr. Hicks attended the anniversary ceremony at Las Palmas Air Field, Lima, Peru, site of the academy, and presented an engraved trophy to the commandant, Maj. Gen. Cesar Yepez. The trophy portrayed models of two Northrop-built fighters, the A-17 and the F-5E in Peruvian markings. The A-17 was the first fighter Peru purchased from Northrop in 1939. The Peruvian government is currently considering the F-5E for its Air Force.

During his stay, Mr. Hicks was the guest of Lt. Gen. Rolando Gilardi, commanding general of the Peruvian Air Force.

In September of last year, Mr. Hicks served as tour manager for the F-5E goodwill visit to Latin America which followed the Sao Paulo, Brazil Air Show.



ONE OF THE EARLIEST fighters Northrop developed, the A-17, and the latest, the F-5E, are portrayed on trophy presented to the Peruvian Air Force Academy commemorating its 50th anniversary in November. Stephen B. Hicks, Customer Requirements, represented Northrop at the ceremony in Lima.

JUANITA CHRISTIANSEN ELECTED

Juanita M. Christiansen, administrative assistant to James V. Holcombe, Corporate vice president, Corporate Domestic Field Offices, Washington, D.C., has been elected vice president - Programming of the Top-Side Aviation Club of Washington. The club is an organization of women who hold high level positions in aviation.

JAMES BENEFIELD, Northrop Services, Inc., Houston, receives check for $1000 from Harry Clagett, project manager, left, for his suggestion to connect east and west tank farm high pressure GN2 systems in the Space Environment Simulation Laboratory, for better reliability and a cost savings for a one-year period of approximately $30,000.

BSL Opens Office In North Carolina

The Business Data Systems Division of Berkeley Scientific Laboratories, a wholly owned subsidiary of Northrop, is opening a branch marketing office in Hickory, North Carolina, according to A.T. Migliori, vice president and general manager of the Torrance based firm.

"This community we have chosen to open our office in represents the heart of the furniture manufacturing business in the U.S. as well as the world. In North Carolina alone, there are over 600 furniture manufacturers, and over 1500 in that four-state area of the eastern seaboard," Mr. Migliori explained.

"By having a branch office with a marketing and technical staff there, our opportunity for sales of our business systems to this large market will be greatly enhanced," he said.

MEMBERS OF the Syndicat National Des Constructeurs de Menuiseries, Murs, Rideaux, et Cloisons Mettalegues — the French metal manufacturers association — were recent visitors to Northrop Architectural Systems. The group made the local visit as part of their tour of major metal manufacturing companies in the United States. The visitors were shown the full Arcadia line of products and toured the plant to see NAS manufacturing methods. The group was hosted by NAS President James E. Ware and Marketing Manager Fred Hoffrichter.

THE FIRST of what they hope will be several paper recycling stations throughout the Aircraft Division has been set up in the Engineering Center by Rose Solomon, center, with the assistance of Diette Vrooman, right, and Greg McGill. The trio takes partially used paper donated by various departments and makes note pads from it which are in turn made available to departments in the division.

Four Executives Present Papers At Joint Seminar

Four Northrop executives participated in a seminar jointly sponsored by the U.S. Department of Commerce and the Electronic Industries Assn., which was held during the Brazilian Sao Paulo Air Show.

Robert Gates, vice president, Northrop International, served as co-chairman of one of the sessions together with Brigadier J.V. Cabral Checcia, administrator of the Galeao Airport of Rio de Janeiro. Presenting papers during the symposium were W.H. Arata, Jr., vice president and technical advisor, Northrop Airport Development Corp.; Fred Woods, Business Development manager, Electronics Division; and W.R. Lewis, director, Product Planning, Wilcox Electric, Inc., a wholly owned subsidiary of Northrop.

Mr. Arata presented a technical paper involving the "Economics of Accelerated Airport Development," which dealt with the technicalities encountered in a typical new airport such as time gaps, excess costs, and potential design problems of the traditional approach, and offered the alternatives for alleviating these specific problems.

Mr. Woods delivered a presentation on the Omega Navigational System covering its history, application, and versatility including integration with other navigation systems for improved performance and application ability.

"Instrument Landing Systems — Available Options," was the subject matter of Mr. Lewis' lecture as he presented a 25-minutes film covering the various categories and types of instrument landing systems, simplified directional facilities, and the various antenna types, their patterns and relative merits.

Northrop participation in the Air Show included a chalet and F-5E flight demonstrations, a static display at Sao Jose dos Campos and Northrop Corporation film, and an Omega booth and display at the Anhembi Park Exhibition Hall in Sao Paulo.

GALILEO II SOON TO START ON MISSIONS

A new flying laboratory to replace the "Galileo" lost in a mid-air collision in April has been selected by NASA's Ames Research Center.

Northrop Services, Inc. will provide maintenance for the new airborne laboratory as it did for the previous "Galileo."

The new "Galileo" is a Convair 990, provided by Airmotive Corp. of Burbank. It is being obtained as a surplus from Garuda, the Indonesian National Airlines. After overhaul in Hong Kong, the plane will be flown to Ames Research Center, Mountain View, where structural modifications and $1 million worth of avionics equipment will be installed.

One of the first missions for the airborne research laboratory will be participation in the Global Atmospheric Research Program's Atlantic Tropical Experiment next June. This project, to be carried out in the South Atlantic Ocean, will study the origin of hurricanes.

Employees Again Unite To Help Needy Families

For the 20th straight year, Northrop employees have united in a voluntary program to share the holiday spirit with needy families in the community.

In 1973, the Northrop group raised nearly $75,000 in cash and gifts for 56 area families and 20 local community programs. A volunteer committee works with community social organizations to identify families needing assistance. The Christmas season is the backdrop for this expression of goodwill. Money, clothing, food, medical bills, and other necessities are among the things donated.

Northrop employees started their expression of goodwill in 1954 providing food for one family. In the next few years, the program grew with many more employees participating and many more families receiving the contributions. Today, the program is backed by thousands of Northrop people who promote in-plant fund-raising activities to raise the money needed.

Each year, a few days before Christmas, Northrop employees privately host each family and give them refreshments and gifts. For all involved, the occasion becomes one to be remembered throughout the year.

Savings Bonds To Earn Extra Half Per Cent

The interest rate offered on U.S. Savings Bonds has been increased from 5½ per cent to 6 per cent and the maturity period on E Bonds shortened to five years according to Jesse Adams, acting Savings Bonds director. Previously the maturity period for E Bonds was 5 years and 10 months.

The increase, effective Dec. 1, 1973, also means an improvement on all outstanding bonds. They will now earn an extra one-half per cent for each semi-annual interest period beginning on or after that date until their next maturity.

Yields on U.S. Savings Notes - Freedom Shares - are also raised by half of one per cent for their remaining life effective with the first semi-annual interest period, beginning on or after Dec. 1, 1973. Freedom Shares were sold, in conjunction with E Bonds, from May 1, 1967, through June 30, 1970.

Since many Northrop families already own Savings Bonds, the rate increase will benefit not only them but also the communities in which they live when the interest becomes spendable income.

Remember that we help ourselves and our country by the regular purchase of better-than-ever U.S. Savings Bonds.

JESSE Manlagnit, Industrial engineer, Aircraft Division, has been named wrestling coach at the Hawthorne Family YMCA where he will coach boys 6-14 years old. Jesse began wrestling in 1950 while attending Far Eastern University, Manila, and was University Athletic Assn. of the Philippines champion four years. He also participated in the Summer Olympic Games in Helsinki in 1952 and the Pan Asian Games in 1954.

Northrop Credit Union Schedules Annual Meeting

The Northrop Hawthorne Credit Union has announced the annual meeting of the shareholders will be held in the cafeteria, Hawthorne, on Tuesday, Feb. 4 at 5 p.m. Shareholders of record on the books at the close of business Feb. 5 will be entitled to vote at the meeting.

Purpose of the meeting will be for election of directors, credit committee and supervisory committee members for the new year and any other business transactions which may come before the meeting.

Proxy ballots were mailed to members in October. If you have not mailed your proxy to the Credit Union, please do so.

The board of directors of the Credit Union has announced the semi-annual dividend paid on accounts was 6-¾ per cent on Jan. 1. A record amount of payment was credited to members' share accounts.

Dividends are consistently higher in the Credit Union. Open a family account now.

Ward Dennis Keeps Promise to His Son

"It was the climax of all our outdoor years together." This was the way Ward Dennis summed up the 2500 mile hike he made with his son Patrick across the Pacific United States from Mexico to Canada.

The Dennises, father and son, began hiking together when Pat — now 20 and an Eagle Scout — was a cub scout. In the years that followed their accumulated hikes totaled more than a thousand miles.

Then five years ago, when the National Trails Systems was laid out, Mr. Dennis promised Pat that they would someday hike the Pacific Crest Trail. This trail, along the Western Mountains, begins at Campo on the Mexican border and ends at Manning Provincial Park on the Canadian-U.S. line.

"This year I realized that I would be 51 years old and if I ever intended to keep my promise it had better be now," he said.

Starting Point

So after months of planning, he took a leave of absence from his work at Northrop. He and Pat backed against the fence between the U.S. and Mexico and stepped off on April 14. They carried 50 pound packs. Thirty pounds was equipment. The rest was food. They had arranged for additional food by sending boxes to themselves at post offices along the way.

Their trail led past Palm Springs and Big Bear Lake, the edge of the Mojave Desert and into the High Sierras. Here they found the trail blocked with ice and snow. Unable to wait for the thaw, they took a plane to northern California where the lower altitudes and lighter snowpack allowed them to walk south along the trail to the point where they had been stopped. This completed, they enplaned back to northern California to pick up the trail there. So even though they had to hike backward part of the way, they covered every step.

Varied Route

Their route led over steep mountain passes, across icy ledges, rivers, shoe-destroying lava beds, and at times in Oregon, through smoke from the forest fires. In all they each wore out two and a half pairs of hiking boots in traveling through 23 national forests, seven national parks and five state parks.

Fish and wild huckleberries supplemented their diet. Drinking water was a constant problem. Once they found a waterhole by following a thick flight of butterflies. Except for an occasional rattlesnake, which caused no problem, their only trouble with animals was with an angry bull who challenged their passage across a ranch.

Most of the time, they used a light tent for sleeping. At times they took shelter in deserted miners' shacks. Once, to get out of the rain and avoid the snakes infesting the meadow, they slept in the bed of a ranger's pickup under a shed.

In the beginning they saw few people on the trail, but after June the number went up greatly. There were a large number of women among these hikers. One couple they met had two dogs carrying packs. On another occasion they met a woman riding a pony express route as part of a civic-celebration. They gave her a letter to add to her mail bags. Then for two days they walked with the son of Greg Cadice, who had been General Purchasing Agent for the Electro-Mechanical Division until 1964.

Birthday Dinner

Mr. Dennis celebrated his 51st birthday while three quarters of the way along. His birthday dinner was Spam, potato pancakes and peas. And his "Happy Birthday" song was the wind in the pines.

The long walk ended on Sept. 16 at Manning Provincial Park in Canada. It had taken 155 days. While it had been a wonderful trip, Mr. Dennis admits that it was difficult for him at times.

"We first started hiking together when Pat was 10. I was out in front and he struggled to keep up. This time I was bringing up the rear and wondering sometimes if I would make it," he said.

Last Chance?

"Perhaps walking 2500 miles was more than I should have done this late in life, but it appeared to me that this was my last chance to do something like this with my son.

"We started hiking originally because Pat liked hiking and the outdoors and I joined him. My work with the Scouts had shown me that, almost invariably, boys who get into trouble, either had no fathers or had fathers who took no interest in them. If Pat was interested in hiking, I was going to be interested. This hike was my last major trip and was the climax of our years on the hiking trail.

"So as I store my hiking boots away, I'll have to finally admit that while these hikes began for the benefit of my son, they helped dad as much or more than it did him."

ALL ABOARD

Beard's Daughter Drives Bus

It is just as easy to drive a 21,000-pound city bus as the family car, according to Barbara Beard Bradley, 21-year-old daughter of Bert Beard of Electro-Mechanical Division Maintenance.

And she should know for she is one of seven women recently employed to drive city buses for the Orange County Transit District.

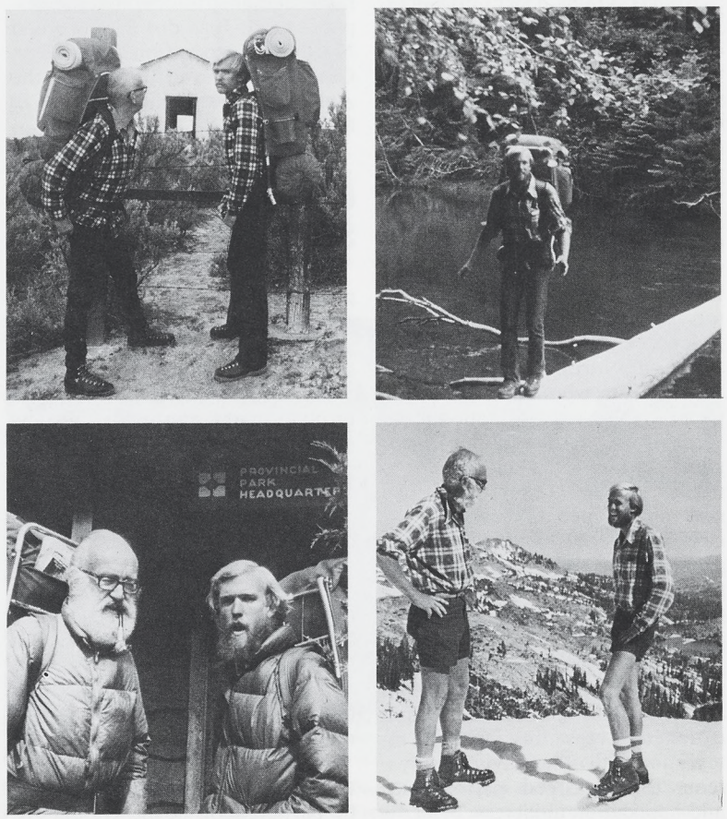
She finds nothing unusual in women driving city buses. She has always been a driving fan, has her own sports car and once took a few hundred-mile-an-hour spins at Orange County Raceway. Before switching to the big city buses, she drove a school bus. She took a three week course when transferring to city buses.

She found that chauffering a big bus in and out of traffic was no problem for her. The hardest part was learning to make change, hand out transfers and drive at the same time.

Women bus drivers are still enough of a novelty to surprise the public, she finds. "One guy almost rear ended the car ahead when he looked up and saw me behind the wheel," she recalled. But passengers have readily accepted women bus drivers. She and the other women drivers often get compliments from passengers. Some say they would rather ride with women drivers and that they drive and brake smoother than men.

Social Security Taxes Increased

To finance increased benefits, social security taxes have been substantially increased in 1974. The rate of tax remains the same at 5.85 per cent, but the wage base on which the tax is calculated has been increased to $13,200 in 1974 as compared to $10,800 in 1973. Therefore, the maximum social security tax for employers and employees is now $772.20 each, up from $631.80 last year.

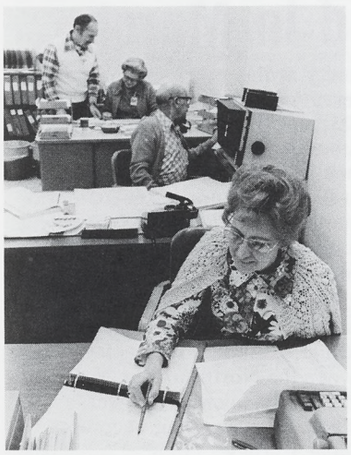


STEPPING OFF from the California-Mexico border on April 14, Ward Dennis and his son Pat began their 2500 mile odyssey across the Pacific United States to Canada. Right top, from crossing streams on fallen trees, to, bottom left, scaling snow-laden mountain passes, the duo followed the Pacific Crest Trail through 23 national forests, seven national parks, and five state parks. Bottom right, walk's end 155 days later has Ward and Pat smiling triumphantly at Manning Provincial Park in Canada.

Northrop Team Is Working to Conserve Energy

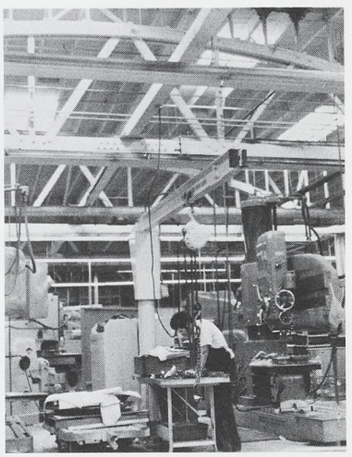
"PLAY-IT-COOL for energy conservation" is the idea Mrs. Francis Brown, Administrative general clerk, is trying to convey to fellow employees at Northrop Worldwide Corporate office in Lawton, Okla.

REDUCING the lighting in hallways and areas that won't hamper job performance, is one of the ways the Aircraft Division, Hawthorne, is working to conserve energy. The area pictured is in Plant One.



SWEATER SET is the fashion of the day at the Ventura Division as employees use the attractive garments to fight the energy shortage which has resulted in somewhat lower working temperatures. From the front are Alice Greiner, Claude Berry, Helen Cook and Grady Means.

ANYTHING and everything to help save energy is the policy at the Electro-Mechanical Division and that includes using ping pong balls for something besides playing a game. Using the plastic balls as floating covers for heat treat tanks, workers are able to seal in heat, reduce evaporation and cut humidity in the anodyzing room. M. L. Hawkins, anodyzer, demonstrates how the floating-ball covers readily push back so that he may treat plates to be used in construction of HAWK air defense missile launchers.

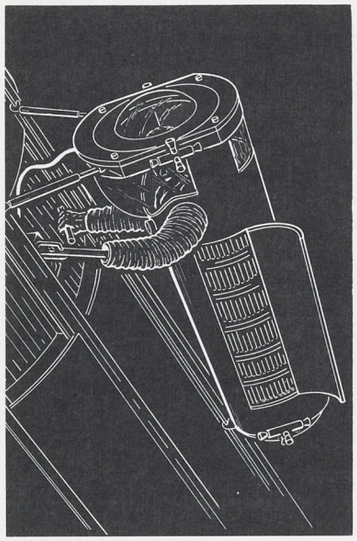


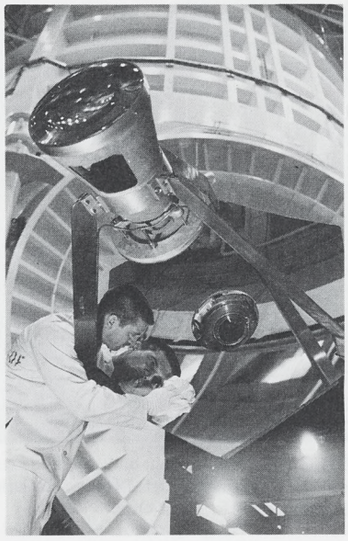
PLASTIC-covered skylights permit a reduction in artificial lighting in the machine shop at the Electro-Mechanical Division and permit the lights to remain off for four hours a day and half the lights for the other four working hours. R.V. Duran is the machinist in the foreground.

PALMDALE FEELS THE CHILL

EMPLOYEES AT Palmdale rang in the New Year with a record snowfall which saw up to 20 inches fall in some areas of the high desert January 4, including Plant 42. At left, the final assembly building offers a serene setting while, at right, F-5s strike a chilling pose in their 'winter' camouflage. Photos by Chuck Smith.

Historically Speaking





RECENTLY SKYLAB astronauts had to venture outside their spacecraft to make repairs, bringing to life a concept investigated at Northrop 13 years ago. As this drawing from the Mar. 30, 1960 issue of the Northrop News shows, what was then the Norair Astro Systems and Research Lab, was very much concerned with a concept for making manned spacecraft repairs in space. When the need to make repairs finally came, Northrop was also a part of the work. Technicians from Northrop Services Inc. worked on the design, fabrication and test of flight items connected with the parasol erected over Skylab I to shield the spacecraft from the sun when a sun shield was lost, resulting in excessive heat inside.

WINCON to Honor Senator

Senator Barry M. Goldwater (R.-Ariz.), a leading member of the Senate Armed Services and Aeronautical and Space Sciences committees, will be honored during the 15th Annual Winter Convention on Aerospace and Electronics Systems (WINCON '74), to be held March 12-14 at the Los Angeles Marriott Hotel.

David N. Ferguson, Corporate vice president and general manager, Electronics Division, will be serving as chairman of the convention which is designed to update top aerospace and government management on current technical developments. WINCON is sponsored by the Los Angeles Council of the Institute of Electrical and Electronic Engineers and the Aerospace and Electronic Systems Group.

A BIG ONE

LEE R. Honerkamp, Northrop engineer from Hawthorne, assigned to Boeing Company, Seattle, Wash., is all smiles for he limited out on the charter boat, Mr. Smiles, out of Salmon Charters with a 20-pound hooknose silver salmon as tops when he vacationed at Totem Trailer Park.

ALTHOUGH HE cannot do anything about the wet weather here, Jim Giardina, American Airlines Group/Charter Sales representative, right, is guaranteeing lots of sun and fun for employees taking the Costa Del Sol Tour to Spain March 10. Ready to get away from it all are, left to right, Dave Carney, Cathy Paris, and Randon McDonald.

Travel Club 'Dream Plan' To Spain Offered in March

The NRC Travel Club presents an American dream plan to Spain's Costa Del Sol for nine days and eight nights for just $399, plus 15 per cent tax, departing March 10, and returning March 18.

A go where you like, do your 'own thing' kind of tour that gives you all of Southern Spain. Bask in the sun and take a dip in the sea. See the Alhambra and Rock of Gibraltar or take the exciting hydrafoil to Casablanca.

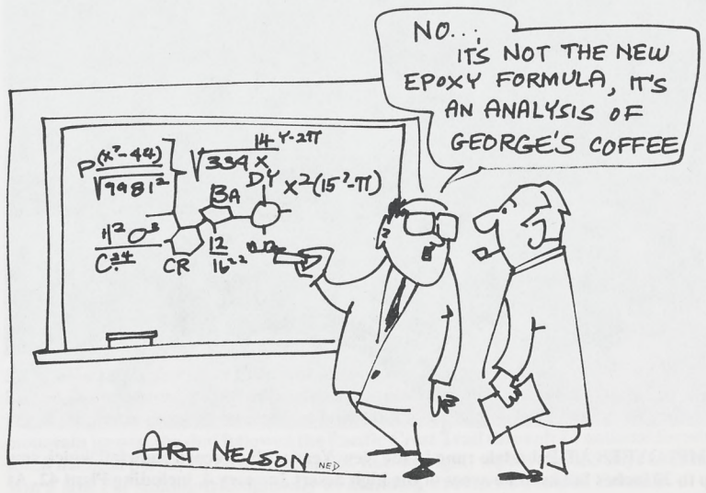
Your ticket price includes round trip air fare from Los Angeles to Spain on scheduled American Airlines and Air France services; transfers from airport to hotel at Malaga and Paris; hotels, first class accommodations with private bath based on double occupany; sightseeing, including full day Granada tour lunch; free automobile for three days for each two persons with unlimited mileage, rental, and insurance; and continental breakfasts throughout the tour.

This is a once in a lifetime opportunity at this price so get your reservation in now to secure a seat. A $25 per person deposit must be submitted with tour reservation and the balance is due 30 days prior to tour departure. Cancellation of tour reservation after Feb. 9 will be subject to possible forfeiture of deposit fee.

As an added attraction, arrangements have been made for a soccer exhibition to be played between the Northrop tour party and the highly talented University of Madrid soccer team, according to Dave Carney, Travel Club commissioner.

"We have also confirmed with the airlines that we will be staying overnight in Paris on the return trip," Dave added.

For further information contact Dave Carney, Aircraft, ext. 1682; Jeanne Zubak, Electronics, ext. 542; Duane Baptiste, Electro-Mechanical, ext. 244; or Tony Piscuskas, Ventura, ext. 371.



Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Motor Home, 1970 Winnebago, 24', s/c, Dodge chassis, roof air, gen. $7500. 213-378-1026.

Datsun, 1967 roadster, w/camper, rebuilt carbs, new battery, 3 year guarantee, 5 steel belted tires, low mileage. $800. 213-677-2983.

Dune Buggy, 1966 VW, many extras, $950. 213-864-0833.

Motorcycle, 1970 Honda 70 cc, 4000 orig. mi., $225. 213-342-4479.

Chevy, 1973 Blazer, p/s, p/b, a/c, auto., am/fm, h/d susp, 350 V-8 4 w/d. $4295. 714-774-9920.

Ford, 1968 Country Squire, r/h, a/c, p/s, p/b, dfrs, lug. rack. $750. 714-962-2367.

Ford, 1964 Galaxie, 2 dr, fully auto., blk exterior & blk vinyl interior, 75,000 mi. $400. 213-676-6352.

Honda, 1972 350 CL, shop manual inc. $525. 714-840-2032.

Motorcycle, 1973 Yamaha 125MX, new knobbies, $500. 213-679-7746.

Mercury, 1969 Marquis, 1-owner, 36,700 act. mi., 6-way seats, FM-AM stereo radio, a/c, $1400. 213-641-3333.

Triumph, 1961 TR3, new tires, top, uphol, paint job, front end reworked & valve job. $595. 213-329-9510.

Jeep, 1951, 4-whl dr., roll bar, canvas top, f/w hubs, 221 cu Ford V8 eng, running gear like new, $1800. 213-375-0122.

Motorcycle, 1969 Honda, 350 cc, $325. 213-834-3290.

Plymouth, 1970 Barracuda 440-6 pak all power, white vinyl top, red enamel. Red-white interior. $1400 or take over payments of $66.91. 213-376-6668.

Motorcycle, 1965 Honda 90, $125. 213-431-9968.

Camper, 11' Teardrop, 1968, sleeps 5, $1200. 213-378-3838.

Ford, 1967 Fairlane stn. wgn., r/h, p/s & p/b, $650. 213-532-1768.

Miscellaneous For Sale

Maple Dining Room Set. 56" round dbl drop leaf table, 4 captain's chairs, 2 mate's chairs. $60. 213-547-4062.

Motorcycle Trailer, 3 rail, w/tool box. $125. 213-644-3826.

Water Bed, Super Twin, w/nat. pine frame, fully lined, $25. 213-821-7532.

Sailboat, 25' Coronado, fully equipped, outbd., new bottom, stereo tape deck, sleeps 5, 6 yrs. old. $5600. 213-325-9801.

Child's lever car (Jet Racer) age 7-12 yrs. $10. 213-675-1057.

Camper Shell, 8' Topkat, $375. 805-495-3381.

Bed, dbl, mattress & box spring. $65. 213-530-3666.

Camera Accessories, 135 mm telephoto lens; cover to fit Pentax case, 49-59 mm stepping ring; 52 mm starburst filter; 52 mm 85A filter $60. 213-322-2332.

Camera, 35 mm SLR 3.5, 135 mm lens, $70. 213-672-6100.

Surfboard, 6'9" Round Pin Tail, 3 stringer, mid-winter. $55. 213-371-5308.

Bedding, 25 children's blankets & sheets. $12.50. 213-376-4831.

View Camera, 5x7, double extension bellows, all adjustments, complete with developing tank, film holders. $45. 213-645-1489.

Coffee Table, 48" round, imitation marble, walnut trim. $50. 213-325-2292.

Refrigerator, 2-dr. Trucold, bottom freezer, frost free, left hand dr., coppertone. $100. 714-531-8652.

Office Table, 4 chairs, solid oak, walnut book case, $100. 213-329-7447.

Drill Press, Craftsman, ½" Jacobs chuck, ⅓ h.p. $95. 213-675-3434.

Sailboat, Hobi-Cat, w/1973 trailer, $1700. 213-376-6668.

Miscellaneous For Sale

Carpet, 18x22, 44 sq. yds. high low beige, $95. 213-324-8853.

Puppies, Irish Setter, AKC champion stock, available 31 Jan. 1974. $100. 213-329-6264.

Slide Projector, airquip, w/12 trays & stack loader, $45. 213-645-7972.

Motor Boat, Pirelli, inflatable, never used. $500. 213-457-2110.

Tonneau Cover, for 1966 MGB, $10. 213-644-7079.

Stereo, Garrard changer, AM/FM Morris Fielding tuner, 2 spkrs. & blt-in Korting tape recorder $125, 805-323-0985.

Sewing Machine Table, fits all makes, $14. 213-545-0030.

Refrigerator, Frigidaire, 16 cu. ft., $42.50. 213-753-7484.

Snow Chains, fit most compact cars, $5 pr. 213-676-6449.

Dining Set, Daystrom, table, 6 chairs, credenza, tea cart, $200. 213-541-1913.

Bicycle, Huffy 'Slingshot,' 20", 3 yrs. old, $25. 213-325-2637.

Lehman-Accessory Drive for Chevy V8 inc. dual dry sump oil pumps, water pump & fuel injection fuel pump & dual oil filter mountings. Casting, comes with cam & crank couplings & block elbows. $250. 213-679-6108.

Show Aquarium, 26 gal., incl. filter, heater, aeration equip. w/silent giant, heavy duty wrought iron stand, plus 15 tropical fish, $80. 213-532-8201.

Bed, ¾, box springs, mattress & frame, $25. 213-532-8201.

Wanted To Buy

Guns, old, rifles or pistols, regardless of condition. 213-457-7086.

Skis, (Glass) size 150 cm. 805-488-1405.

Guitar Cases, 1 or 2, 213-371-4285.

Refrigerator-Freezer, lge., late model, working cond. unimportant, 213-374-2524.

Records, r&b vocal group, 1950-1959, 45's, 78's, or l.p.'s. 213-675-6678.

Grill, fenders, windshield, r/dr. glass, for Maverick. 213-328-3306.

For Sale Or Trade

Sunbeam, 1967 Tiger, make offer or trade for economy car w/auto. trans. & air. 213-371-9758.

Camper Trailer, collapsible, sleeps 4, stove & butane tank, $300, or trade for Suzuki, Yamaha or Honda 100-125 cc dirt bike. 714-586-2344.

Rentals Wanted

Unfurnished upper one bedroom apt. Rosecrans-Crenshaw area. Stove, carpets, drapes & garage. Adults-no pets. 213-327-1921.

Rides

Have 8-pass. bus-van, share rides w/7 from Torrance area, pickup on Hawthorne Blvd. from 226 St. to 190 St., east to Prairie Ave. to Gate 10, 7:45 a.m.-5 p.m., Aircraft exts. 1018, 2521, 213-326-3075.

Ride Wanted/offered, Newhall, Saugus, Valencia area to Aircraft Division, 8 a.m.-4:42 p.m. shift. ext. 1858, 805-259-6570.

Car Pool, 8:15-4:45, La Cienega Blvd. & Santa Monica Blvd., West Hollywood NRTC, ext. 4803. 213-654-2879.

Interested in car pool, would the driver of a yellow Mustang with license #XXM175, parking sticker #1, driving LaBrea north to Olympic Blvd., please get in touch with I. Jungmann, Aircraft, ext. 5154.

Personals

We wish to express our sincere gratitude and heartfelt thanks to the fellow workers and friends for the kind deeds and messages of sympathy during the loss of my wife and our daughter. EUEL F. MILLS and JIM WILLIAMS FAMILY.

Thanks to all my Northrop friends who visited and sent me cards during my recent stay at the hospital. It sure was a morale booster. MEL SHORR.

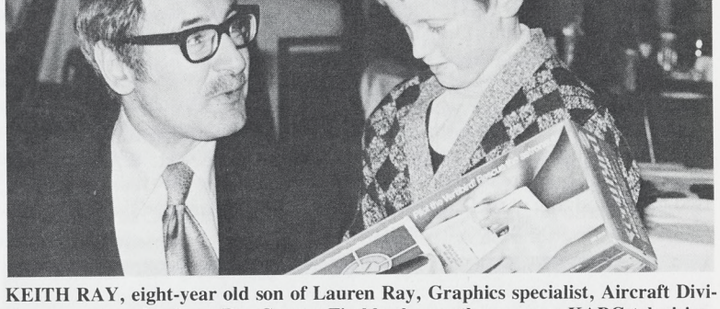
Sincere appreciation and thanks to my many friends at Northrop for the wonderful going away party and gift upon my retirement. RITA HARRIS.

I want to thank all the nice people at Northrop that made my retirement such a pleasant one, and thank you for the wonderful gifts. HENRY HEGLAR.

My sincere thanks to all of you for the lovely luncheon and gift on my retirement. IRENE LARSON.

GOLDEN BROOM AWARD is presented to Arts & Graphics Nina Melton by Fred Bender, technical representative for Eastman Kodak which made the award for Nina's 'outstanding housekeeping' in the Ventura Division's Photo Laboratory.

NORTHROP DAKOTA, Inc., Newtown, North Dakota, a subsidiary of Northrop, has taken steps to conserve energy including the installation of locks on all thermostats within the facility. Here Emil Ranum makes sure the temperature is set at 68 degrees before locking the control.



KEITH RAY, eight-year old son of Lauren Ray, Graphics specialist, Aircraft Division, accepts prize from Dr. George Fischbeck, weatherman on KABC television, during awards ceremonies for the Camera Days photo contest held at Los Angeles Harbor. Keith took third-place honors in his division with a color slide entry of a sailing ship and also won free passes to Universal Studios and Knotts Berry Farm. Photo by Doug Keifer.

BUY U.S. SAVINGS BONDS

Sale Postponed

The sealed-bid sale of electronic class B equipment and office equipment scheduled for January at the Electronics Division's Western Avenue warehouse facility has been postponed until the end of February. Watch the February edition of the Northrop News for sale information.

WANTED

Paperback and hard cover books for lending library for Northrop personnel on overseas assignments. Mail to Orgn. 8850, Zone 23, or call R.M. Brown, ext. 4004, Aircraft Division. Will pick up at any location.

NORTHROP NEWS

Vol. 32 No. 1

Published monthly by Northrop Corporation Employee Communications.

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Editor—Ventura Division ..... Park Irvine
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Club Commissioners are Factor in NRC Success

One of the best and most varied schedules of spare-time activities in recent years is on tap for the Northrop Recreation Club in 1974 and employees and their families of all the Southern California operations are encouraged to take part.

In citing reasons for the success and growth the NRC has experienced, Tom Brady, chief of Personnel Administration, Electronics Division, noted, "While it is true that our division as well as the other divisions are experiencing a rate of rapid growth thus contributing to our membership, our success has to be attributed to the willingness of individuals to organize and lead the clubs as well as perform the vital preparations that go into our special events. These people do an exceptional job."

Among those people Mr. Brady spoke of are the commissioners of the clubs who perform the regular routines necessary to keep them functioning. The following individuals are the club commissioners for 1974:

Archery — Dennis Mahaney, Electronics.

Basketball — Ron Fisher, Aircraft; Floyd Wright, Electronics.

Bible — John Hanson, Aircraft.

Bowling — Rosalie Smith, Aircraft; Ron Sutton, Electronics.

Bridge — Bud Bowser, Aircraft.

Camera — John Welsh, Aircraft; Jeanne Saxon, Electronics.

Canoe — Chuck Pristas, Aircraft.

Coin — Jack Wilson, Aircraft.

Flag Football — George Bardizbanian, Aircraft.

Gem and Mineral — Ed Slawinski, Aircraft, Days; Gladys Johnson, Aircraft, Nights.

Golf — Aircraft, Harold Weller and Howard Cornelius.

Golf — Electronics, Ted Deguisne.

Gun — R. E. Doyle, Aircraft.

Karate — Hank Frost, Aircraft.

Leathercraft — Dick Reamer, Aircraft; Ed Sterbenz, Electronics.

Model Airplane — Earle L'Homme, Aircraft.

Mountaineering — Eldon Burgess, Aircraft.

Radio — Dick Mirko, Aircraft; Bob Cobb, Electronics.

Retirement — Mike Orth.

Scouts — Nick Nicholson, Aircraft.

Sea Anglers — Elmer Baldwin, Electronics.

Skeet and Trap — Bob Thomas, Aircraft.

Ski — Rick Crane, Aircraft; John Rufino, Electronics.

Soccer — Norm Jackson, Aircraft.

Softball (Men's) — Ervin Schott, Aircraft.

Softball (Women's) — Susan Truitt, Aircraft.

Table Tennis — Glen Gardner, Electronics.

Tennis — Maxine Lewis, Electronics.

Toastmasters — Ralph Hennings, Aircraft.

Toastmistresses — Mary Buxton, Aircraft.

Travel — Dave Carney, Aircraft; Jeanne Zubak, Electronics.

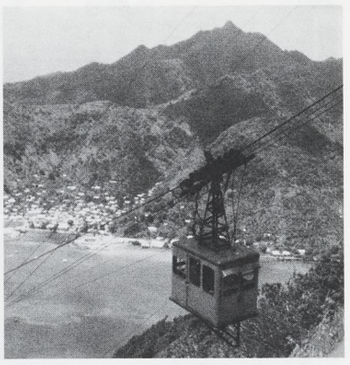
Volleyball — Stewart Ahnin, Walt Goede, Electronics.

Square Dancing — Jim Zwickel, Electronics.

Stamp — Ed Wojnar, Aircraft.

Surf Fishing — John Cote, Aircraft.

THE Stamp Club meets monthly at the NRC Clubhouse to trade and discuss new and old stamps and philatelic items.



THE scenic Island of Pago Pago was just one of the many sights of the Travel Club's South Pacific tour.

DAVE McNALLY, left, accepts trophy for winning high-point honors for 1973 during Camera Club competition from John Welsh, commissioner.

JEANNETTE Lathrop awaits pitch during girls' softball play. She is a member of the Northrop Lightweights who compete in industrial leagues around the southland.

Las Vegas Trip Planned

The NRC Travel Club's annual weekend trip to Las Vegas is scheduled for March 29-31, departing from the Electronics Division at Hawthorne. Parking will be available in the company locked parking lot for cars left over the weekend.

The ticket price of $45 per person includes deluxe chartered Greyhound bus transportation; two nights lodging at the Landmark Hotel (rooms double occupancy), and portage in and out of hotel; fun book, including free breakfast, brunch, bingo, casino chips, drink and many more surprises; and free liquid refreshments en route to Las Vegas.

For reservation information contact Gail Wise, ext. 425, in Personnel Activities, or Jeanne Zubak, ext. 542, Travel Club commissioner.

DOING HER part to brighten up the area is Jo-Ann Leon-Guerrero, IR clerk, Hawthorne, who has been making potted plants out of plexiglas and placing them around the facility. The transparent plastic combined with the green foliage add a refreshing accent to its surroundings as does Jo-Ann's smile.

MANY a Camping Club member will attest to the culinary skills of 'chef' Cliff Marshall on club outings.

1974 GOLF TOURNAMENT SCHEDULE

Jan. 26	Corona National
Feb. 23	Huntington Seacliffs
Mar. 30	Soboba Springs
Apr. 20	Fallbrook
May 5	Ojai
June 8	Circle K
July 20	Camarillo Springs CC
Aug. 10	Azusa Greens
Sept. 21-22	Palm Desert CC
Oct. 19	Spring Valley Lake CC
Nov. 9	San Clemente
Dec. 26-27	Whispering Palms CC

ED SUBIA, Material Estimating, Hawthorne, has just graduated from Pepperdine University, Los Angeles campus, with a bachelor of arts degree in Business Administration. Ed has been attending college part-time for the past 12 years.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 32, No. 2 | February 1974

Professor Miller Addresses the Management Club

Professor Julius Sumner Miller, the dynamic, academic genius who makes the physical sciences come alive in fascinating, informative demonstrations, addressed the Feb. 20 meeting of the Management Club at Lococco's in Manhattan Beach.

Professor Miller, who teaches physics at El Camino College, is better known as Professor Wonderful which was the title he used on his television program that featured his lively scientific demonstrations. He has appeared on all of the major talk shows on television in the U.S., Europe, and Australia.

One of the highest tributes paid to Professor Miller came from Walt Disney when he described Professor Miller as "probably better known than any and all other scientists put together in this, the era of electronic communications."

Phil Graham Marks Silver Anniversary

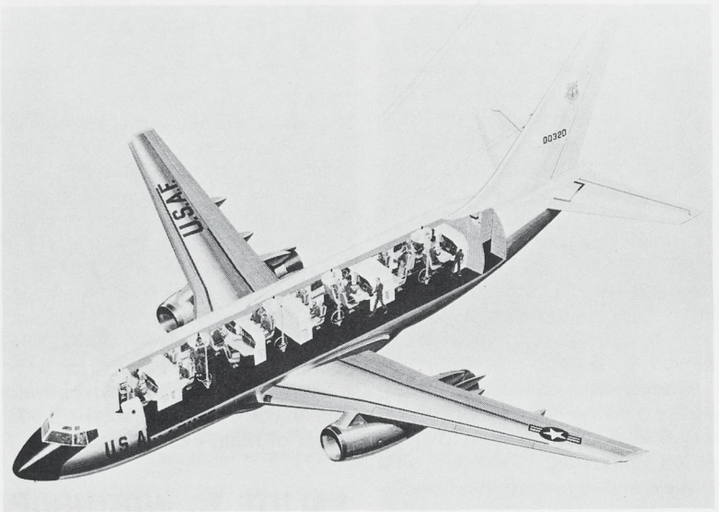
Philip E. Graham, Engineering Technical assistant, Hawthorne, will reach another milestone in his career with Northrop Feb. 28, when he observes 25 years' service with the company he considers ". . . a better place to work."

Mr. Graham began his career as a stretch press operator at the Aircraft Division and after working on the B-35, C-125, and F-89 programs, moved to the Electronics Division in 1959.

A native of Michigan, Mr. Graham attended school in Florida and served in the Army from 1943-45.

Observing 20-year anniversaries this month are Leon Peet and Francis Van Slyke, Hawthorne. Fifteen-year awards were earned by Fredric Nawrocki, Palos Verdes, and Jacqueline Ockerman, and Beatrice Krapf, Hawthorne. Honored for 10 years' service were Marie Niehaus and Frances Fleming, Hawthorne.

Carl Chapman, Western Avenue facility, and Karen Callahan, and Yvonne Satalich, Hawthorne, were the five-year awardees.



ARTIST'S CONCEPTION of the interior of an Air Force T-43A training aircraft being used by the U.S. Air Force to train student navigators at Mather AFB, Calif., depicts the crew stations as well as training section. Seven of the Boeing-built jets have been delivered to Mather equipped with Northrop-built navigational training systems.

Share-the-Ride Campaign Seeks to Form Car Pools

Share-the-Ride is the theme of the Electronics Division's campaign to encourage employees to join car pools for commuting to and from work.

The division-wide program is being coordinated by the Employee Relations office where a file is maintained on interested parties and area maps are displayed showing where the employees live in relation to the facility.

Employees are already responding favorably to the campaign with over 70 applications submitted thus far resulting in the formation of seven new car pools to the Hawthorne and Palos Verdes facilities.

Handling application cards at Hawthorne is Joannie Jones and at Palos Verdes, Lore Krumreich.

Share-the-Ride posters are dispersed throughout both facilities and are equipped with the application cards. If further information is needed, contact Joannie on ext. 262, or Lore on ext. 441.

A number of Com-Bus routes are already established. For departure times and locations see page 4.

SYMBOLIC of his long career with Northrop, is a collection of all the service awards Phil Graham has earned including his recent awarding of the 25-year service award. Looking on is Dave Bond, supervisor.

Gem and Mineral Club Plans Show

The 14th annual Gem and Mineral Show, Wonderland of Gems, will be held Saturday and Sunday, Mar. 16-17, from 10 a.m. to 6 p.m., in the NRC Clubhouse sponsored by the Northrop Gem and Mineral Club.

One of the largest exhibits of lapidary displays, demonstrations, and assorted prizes will be presented and admission is free. Refreshments will also be available.

For the first time, exhibits will be displayed by some of the other charter clubs in the NRC.

Initial Contract For CLINDATA 2400 Awarded

A laboratory data automation system that, for the first time, will be responsible for everything from monitoring automated analyzers and cell counters to filling out insurance forms and keeping a complete inventory of laboratory supplies and equipment has been purchased by Central Diagnostic Laboratories, Sherman Oaks, Calif., from Berkeley Scientific Laboratories, a subsidiary of Northrop.

The CLINDATA 2400, when installed early this fall in the CDL facility, will mark the first time that a "full service/turn key" laboratory data system has been utilized by a private reference laboratory in North America, according to Kenneth Lame, director of Marketing for BSL.

The 2400 features multiple central processors, entry terminals, line printers and 21½ megabytes of mass storage. Status of patients' accounts as well as patient results can be retrieved within miliseconds. The "duplex" concept will allow total continuous operation for CDL without fear of down time.

CLINDATA 2400

"The 2400 technically ties together the BSL CLINDATA 400 clinical data system, already operational in a number of U.S. labs, with the company's BDS 2000 business data system which has also been successfully installed as a stand-alone business system," commented Mr. Lame. "The CLINDATA 2400 will operate in a real-time, on-line mode for all CDL functions; clinical, business and management reporting."

BSL, a pioneer in the field of clinical data automation, has developed the CLINDATA 2400 based on the experience and technology derived from the production and sales of an additional 73 systems delivered to hospitals and private labs since 1967.

"We believe the CLINDATA 2400 system represents a dramatic step forward in clinical computerization," Mr. Lame concluded.

Northrop Designed YF-17 Aircraft to Be Unveiled April 4—Flies in May

Northrop disclosed that it had designed and incorporated refinements in the YF-17 technology demonstration aircraft that will provide an aircraft with characteristics closer to a possible operational air combat vehicle.

"The environment created by the U.S. Air Force for this demonstration program has encouraged innovation," said Roy P. Jackson, Corporate vice president and YF-17 Program manager, "and the emphasis of the program has been on performance of the aircraft rather than on its schedule.

"We've taken advantage of that to make these improvements and will roll out the first YF-17 prototype April 4 rather than in March as initially planned," Mr. Jackson said.

From the outset of the USAF program, the company was allowed to establish its own schedule for construction, roll out and first flight.

The company elected not to "freeze" the YF-17 configuration at the start of the program and refinements for improved operational suitability have continued even during construction of the first prototype.

Mr. Jackson noted that this will make it possible for the USAF to explore the full operational air combat potential available with lightweight fighter technology, beyond the basic performance goals of the Lightweight Fighter Project itself, by making various improvements — in the area of airframe-engine compatibility, for example — even while the first aircraft was being manufactured. The second YF-17 prototype will reflect these and other improvements as well, he added.

Among other changes made during the construction of the first prototype were the addition of two 600 gallon underwing tanks, anti-skid brakes, and improved gun installation access and maintainability.

The YF-17 is the latest in a continuing series of Northrop lightweight, high performance, low-cost fighters. It is powered by two General Electric YJ101 engines, each rated in the 15,000 pound thrust class.

"The YF-17 is not only an advanced technology airframe design, but its twin GE YJ101 engines have been specifically developed to match the requirements of the Northrop aircraft," Mr. Jackson said. "The USAF/Prototype Preliminary Flight Rating Test (PPFRT), has just been successfully completed by General Electric and the engine recommended for flight release by a senior USAF propulsion review board."

Following the unveiling of the initial prototype, the Mach 2 class fighter will go to Edwards Air Force Base, where it will enter a 12-month joint USAF/Northrop flight test and evaluation program. First flight is expected in May. The second YF-17 will begin flight testing later this year. The two aircraft will log a combined total of 300 hours of flight evaluation.

Northrop Growth To Continue on An Upward Trend

Northrop President Thomas V. Jones, and other company officers told representatives of institutional investors visiting Los Angeles area aerospace firms that they expected the growth trend evidenced at Northrop in 1973 to continue during 1974 and over the next several years.

Mr. Jones stated that the company expects to report 1973 net sales at the $700 million level with net earnings for the year showing a definite improvement over the previous year. Backlog reported at the end of 1973 was more than $1 billion.

The institutional investors group was informed that the company expects a return to the upward earnings trend that prevailed over most of the past 10 years. This trend should carry Northrop in the next few years well beyond the record high earnings reported in 1969 and 1970, company officials noted.

Sales for 1974 F-5E fighter aircraft are expected to increase substantially more than $100 million over 1973. The F-5E production rate is expected to increase from the present 12 per month to 20 per month by mid-1975 and to remain at this point for several years.

SALUTE TO NORTHROP

Northrop will be saluted by one of its major suppliers, Ducommun, on Los Angeles radio station KFWB. The series is part of Ducommun's 125th anniversary advertising program.

The Northrop salute willbe aired at the following times: 5:17 p.m., Mar. 11; and 11:17 p.m., Mar. 21.

Chang Earns Business Administration Degree

William W. Chang, member of Technical Staff, Northrop Research and Technology Center, has been awarded his master of business administration degree from the University of Southern California in January.

Mr. Chang

Mr. Chang also holds a bachelor of science degree in electrical engineering from the University of Michigan, and a master of science degree in electrical engineering from the Massachusetts Institute of Technology. He is a member of six national honor societies.

A naturalized citizen, Mr. Chang was born and educated in China and first graduated from Grantham College of Education in Hong Kong in 1955 with teaching credentials.

Now in his 11th year with Northrop, he has authored or coauthored a total of 20 papers and technical reports on nuclear radiation effects, device modeling, and computer-aided circuit analysis. Six of these papers were presented at national conferences.

WESTEC '74

WESTEC '74 (Western Metal and Tool Exposition and Conference), sponsored by the Society of Manufacturing Engineers (SME) and the American Society for Metals (ASM), will be held Mar. 11-15, at the Los Angeles Convention Center. The engineering conference sessions will be held at the Los Angeles Biltmore.

Featured will be the West's largest exhibit of machine tools and accessories, quality and process control equipment, fasteners and adhesives, and many other exhibits from the engineering field.

Participating from Northrop is Al Siggson, senior engineer, Design Standards, Aircraft Division, who is serving as chairman of the Metric Advisory Committee and the Manpower Committee. Al is the SME Region VII, Zone 2 secretary and Metric chairman.

STEPHEN J. Dolinar has been elected secretary and general counsel for Wilcox Electric, Inc., Kansas City, according to Donald R. Egloff, vice president-Finance. Mr. Dolinar, a law school graduate of the University of Missouri, has practiced law in Kansas City area for 18 years. Wilcox, a subsidiary of Northrop, produces aircraft navigation and communication electronics.

Virginia Subsidiary Terminates Airport Planning Ventures

Northrop has announced it is discontinuing the efforts of its subsidiary, Northrop Airport Development Corporation, to obtain further contracts in the field of airport planning and development.

Northrop Airport Development Corporation, Vienna, Va., was established in 1971 to pursue possibilities for new approaches to airport planning and developing, utilizing advanced systems and management techniques.

Although there is a substantial need for worldwide new and modernized commercial airport facilities, Northrop has concluded that at this time world conditions are not favorable for airport ventures of this type, and that its resources can be better applied in other fields.

Kaufold Named President of Wilcox Electric

Roy Kaufold has been appointed president, Wilcox Electric, Inc., according to an announcement by Ross F. Miller, group vice president, Communications and Electronics.

Mr. Kaufold, who has been associated with Northrop since 1947, replaces Robert Shank, who resigned to pursue other interests.

Prior to this appointment, Mr. Kaufold was vice president and manager of the Avionics Department, Hawthorne.

Wilcox Electric, Inc., is a subsidiary of Northrop specializing in aircraft instrument landing systems, antennae, and componentry.

'Everybody Into the (Car) Pool'

'INTO THE POOL' is the point Burt Wiltz and Lisa McNeal are trying to make to Martin Leon, all three of the Product Support Department, Palos Verdes. Actually they are serving as a reminder to employees to take part in the Share-the-Ride campaign which is under way throughout Electronics Division to form car pools.

RIDING IN STYLE are these Ventura Division car poolers as they get ready to leave for their San Fernando Valley homes. From left, Jerry Reilly, Edith Weber, Tom Lucero and Ken Grass, owner of the van. Ken reports there is room for several additional passengers.

'ANYBODY going this way?' asks Angie Ashley, Electro-Mechanical Division Receiving and Inspection, as she checks zone map of Orange County put up by Industrial Relations to help prospective car poolers get together. The division is emphasizing car pooling as part of its energy conservation program.

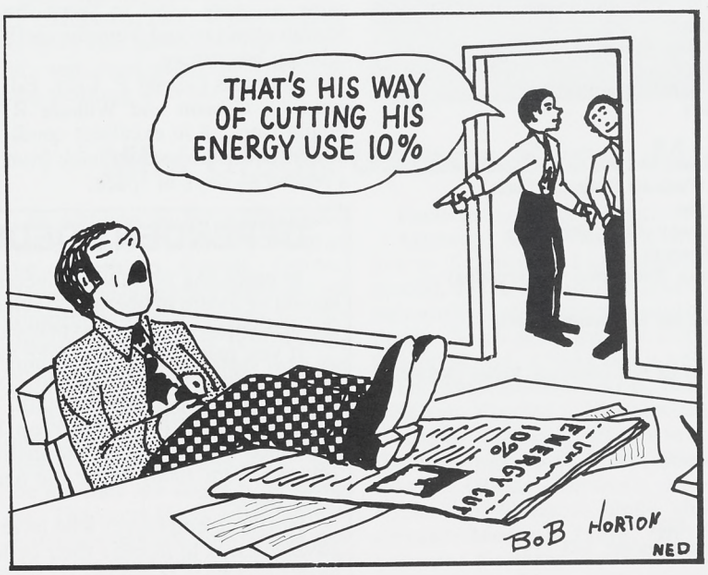
ONE OF THE OLDEST car pools coming into Hawthorne has been that of K.C. Wu, right, Materials Research Department, Northrop Research and Technology Center. For the past 10 years, Mr. Wu has commuted from Orange County sharing the driving with, from left, Dr. G.H. Bischoff, Dr. E.B. Mikus, and Dr. R. L. Jones.

Wilcox Establishes Energy Task Force

An energy conservation task force has been established at Wilcox Electric, Inc., Kansas City, a subsidiary of Northrop.

Chairman of the committee is Norm Schram, manager, Accounting, who will be responsible for implementing energy conservation procedures at Wilcox and making sure each employee and member of management understands and encourages energy conservation.

Assisting Mr. Schram are: Leon Barnes, manager. Administrative Engineering; Bruce Stewart, process engineer, Equipment; Jim Drake, manager, Management Information Systems; and Vern Dahlstrom, manager, Industrial Relations.



Annual Surplus Equipment Sale

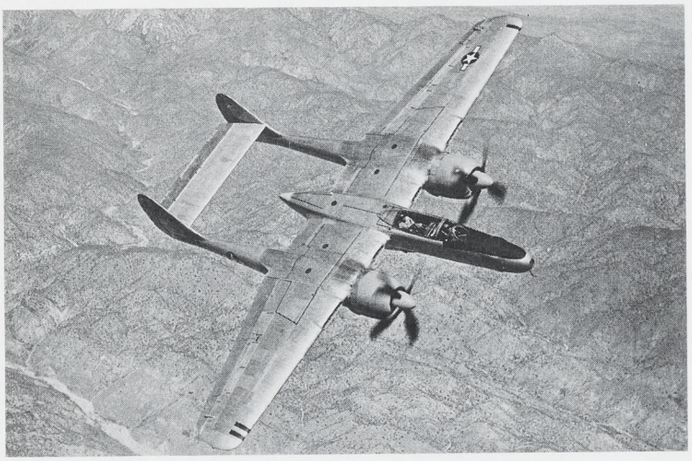
The Northrop Recreation Club will hold a surplus sale of office and electronic test equipment Saturday, Mar. 9, from 9 a.m. to noon at the Western Avenue Warehouse facility.

The warehouse is located on the southwest corner of 132nd St. and Western Avenue in Gardena.

Merchandise offered will be displayed one hour prior to the sale at which time buyers may view and submit bids on those items designated as bid merchandise.

Approximately 200 electronic test items will be sold in a general sale not requiring a prior bid.

Historically Speaking . . .



IN LATE 1946 and early 1947, Northrop delivered 36 of these twin-engined photo-reconnaissance airplanes to the Air Force. These airplanes, dubbed the Northrop Reporters and designated F-15s by the Air Force, had provisions for mounting six cameras. Alternate arrangements made possible mounting of 11 different type cameras. The two-man crew was fully protected from gun fire by fore and aft armor plates, bullet-proof resistant glass plate and deflector plate. Equipped with retractable ailerons and full-span flaps, the F-15 was capable of takeoffs and landings at small airports. The ruggedness and outstanding design was attested by the fact that one of the models was used in the Thunderstorm project under which bad-weather flying methods were being tested.

Wingspan: 66 feet
Length: 50 feet, 3 inches
Height: 9 feet, 2 inches
Weight: More than 28,000 pounds
Range: In excess of 4000 miles
Engines: Two Pratt and Whitney R-2800-C equipped with turbo-superchargers
Speed: More than 440 miles per hour

COM-BUS ROUTES BULLETIN

For information of all personnel, the existing and proposed Com-Bus Routes are listed below. Contact bus captains for further information.

EXISTING ROUTES

7 a.m.-3:42 p.m. Work Shift — West San Fernando Valley (NA#6)
5:35 a.m. Devonshire St. & Canoga Ave., Chatsworth (Hughes Market)
5:40 a.m. Topanga Cyn. Bl. & Roscoe Bl., Canoga Park (Zody's Shopping Center)
5:45 a.m. Topanga Cyn. Bl. & Victory Bl., Canoga Park (Toys R Us)
6 a.m. Topanga Cyn. Bl. & Ventura Bl., Woodland Hills (Denny's)
Bus Captain: Jim Nemo, Aircraft ext. 2754
Asst. Captain: Erna Diller, Aircraft ext. 4371

* * *

7:30 a.m.-4:12 p.m. Work Shift — South Orange County (AP-2)
5:45 a.m. Mission Viejo (Golf Club parking lot)
6:01 a.m. University Plaza (Culver & San Diego Freeway)
6:14 a.m. Brookhurst & San Diego Freeway (Gemco)
6:21 a.m. Westminster & San Diego Freeway (Albertson's)
Bus Captain: Bud Turner, Aircraft, ext. 2971

* * *

8 a.m.-4:42 p.m. Work Shift — Thousand Oaks, Malibu, Santa Monica (NA#7)
6:35 a.m. Townsgate Rd. & Westlake Bl.-(Westlake Shopping Plaza)
6:45 a.m. Ventura Freeway & Malibu Canyon
7 a.m. Malibu Canyon & Pacific Coast Highway (Civic Center)
7:15 a.m. Pacific Coast Hwy. & Temescal Canyon
7:20 a.m. Pacific Coast Hwy. in Santa Monica (Pedestrian Overcrossing)
Bus Captain: Bob Wulf, Aircraft ext. 2826
*** Plans are being made to extend this route out to Thousand Oaks.**

* * *

8 a.m.-4:42 p.m. Work Shift — West San Fernando Valley (NA#2)
6:30 a.m. Devonshire & Canoga Avenue
6:35 a.m. Roscoe & Topanga Cyn. Bl.
6:40 a.m. Topanga Cyn. Bl. & Van Owen
6:45 a.m. Topanga Cyn. Bl. & Ventura Freeway
6:50 a.m. Reseda Bl. & Ventura Freeway
6:55 a.m. Burbank and Balboa
Bus Captain: Don Biedermann, Aircraft ext. 4221
Asst. Captain: Dan Casson, Hawthorne Electronics ext. 613

(See COM-BUS, Page 7)

U.S. Army Awards Service Medal to Colonel Hamilton

William H. Hamilton, colonel, ret., former commander of Ft. Sill's III Corps Artillery, Ft. Sill, Okla., received the Distinguished Service Medal from Maj. General David E. Ott, commander, in a ceremony Dec. 19.

The colonel earned the medal, the Army's highest ranking decoration for noncombat service, for his "eminently meritorious" performance of duty in two positions with the Eighth U.S. Army in Korea. He was chief of the Artillery and Special Weapons Division at Eighth Army Headquarters and commander of the U.S. Army Garrison Yongsan, Seoul, Korea.

During more than 30 years of service, he had a number of important assignments which include commander, III Corps Artillery, a force of well over 10,000 troops. As commander of the U.S. Army Garrison Yongsan, he also received citations from Korean Government officials.

Colonel Hamilton retired from the Army at Ft. Sill in August. He joined Northrop Worldwide Aircraft Services, Inc., as assistant to the president, Rex H. Madeira, and special projects coordinator. He is currently U.S. projects coordinator for the new Southeast Asia Division that NWASI has established in Vietnam.

William Hamilton, colonel, ret., receiving the Distinguished Service Medal.

Safe Return for Skylab Astronauts

When the Skylab 3 astronauts returned safely to earth on Feb. 8, they again marked up another success for the Earth Landing Systems made by Northrop's Ventura Division.

Now, just one more mission will use the always successful landing system and this will be when U.S. astronauts hook up in space with their Soviet counterparts in 1975. U.S. astronauts are to use modified Apollo command modules the same as were used to ferry the Skylab crews to and from the earth orbiting laboratory.

Astronauts Gerald P. Carr, Edward C. Gibson and William R. Pogue were all in excellent condition after arriving safely back from a record 84 days in space.

Dutch, Navy Visit Ventura Division

Recent Ventura Division visitors included Marcus Hansen, Naval Ordnance System Command, and Edward Lesinski, Naval Torpedo Station, Keyport, Wash.

Both men discussed the Northrop 37C program and observed both the 37C and Mark 30 hardware with division officials.

Also visiting the division recently were Capt. J. H. B. Hulshof, director of Naval Armament, Royal Netherlands Navy, Cmdr. Kusters, Asst. Naval attache and Cmdr. Van Schieveen, Torpedo Department head for the Netherlands Navy.

In addition, Jan Hillinga, sales representative for Schreiner & Co., representing the Ventura Division, and Ron Krell, Naval Torpedo Test Station, Keyport, Wash. attended and met with D. B. Maher, Northrop Torpedo 37C Program manager and division personnel to discuss the Netherlands 37C contract.

DEPENDENT DEDUCTION CHANGES

In preparing 1973 federal income tax returns, Northrop employees should be aware of liberalized rules, first effective in 1972, concerning the deduction of certain expenses for the care of dependents.

If you paid someone to take care of a dependent so that you (and your spouse, if you are married) could work, or find work, you may be able to deduct up to $400 a month. The rules concerning this deduction are too detailed for a Northrop News article, but they are clearly explained on Page 12 of the instructions for the federal income tax return (Form 1040) under the heading "Household and Dependent Care Services."

Northrop employees who have incurred such expenses may find it advantageous to itemize their deductions for 1973, even though they have previously taken the standard deduction.

GROUND CREWS THAT will maintain the two YF-17 prototypes at the Edwards Air Force Base Flight Test Facility accompanied the U.S. Air Force personnel from the Logistics Command to the General Electric facility at Lynn, Mass., where the first YJ101-GE-100 engine was completed in December. The 18-man contingent underwent a YJ101 organizational maintenance course conducted by Ernie Lord, senior instructor of the AEG training school. Attendees from Northrop included Don Heywood, YF-17 service engineer; Bill Spore, YF-17 aircraft 2 crew chief; Cliff Laberdie, aircraft 1 crew chief; Joe Strow, quality control aircraft 1; John Wolf, manager, YF-17 Propulsion System Design; Pat Patton, Edwards AFB Engine Shop crew chief; Chris Soihl, Edwards AFB Flight Service supervisor; Jack Williams, Edwards AFB engine mechanic; and George Fetters, quality control aircraft 2.

Horticulture Club Receives Unusual Thank You Plaque

The Electro-Mechanical Division's NRC Horticulture Club has received an unusual plaque, expressing thanks of a young environmentalist the club assisted.

A year ago, club members read an article in a Los Angeles paper about the troubles 19-year-old Andy Lipkis was having with his plan to plant smog-resistant trees in the San Bernardino National Forest.

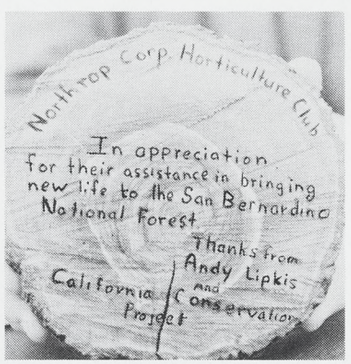
According to the story the young man had obtained 8000 seedlings from the Department of Forestry. College friends and Boy Scouts helped him plant the seedlings in milk cartons to keep them alive, but he was trying to raise money to truck them to the mountains for planting.

Because the young man had the same goals as the club, members voted to make a cash donation to help him. Several also volunteered to help plant the seedlings.

The thank you plaque was a sawn cross-section of a small tree on which Mr. Lipkis had written: To Northrop Horticulture Club. In appreciation for their assistance in bringing new life to the San Bernardino National Forest. Thanks from Andy Lipkis and the California Conservation Project.

Along with the plaque was a letter telling how more than 2000 trees had been planted and plans are being made to plant 15-30,000 more. The seedlings, which are baby Redwoods and pines are smog resistant and are replacing more delicate trees that are dying in the forest because of excessive smog.

Anyone desiring to join in the program is invited to contact the Horticulture President Jim Snow, ext. 347, Anaheim.



LOOKING AT the thank you plaque, above, the Horticulture Club received from environmentalist Andy Lipkis are club members, from left, Betty Schulz, Ann Romero, Sefie Garcia, Jack Lahn and Jim Snow. Plaque shown at left, was made from a sawn cross-section of a tree to create the unusual thank you note.

Lucy A Great Gal, Say Men Of Palmdale Avionics Lab

"You're a great gal, Lucy," say the men of the Avionics Laboratory, Palmdale. And they aren't talking about the cantankerous young lady of the comic strips, but rather, Lucy Roppel, an electronic technician of Emerson Electric, who is working with Northrop on modification tests of the F-5E radar system at the high desert facility.

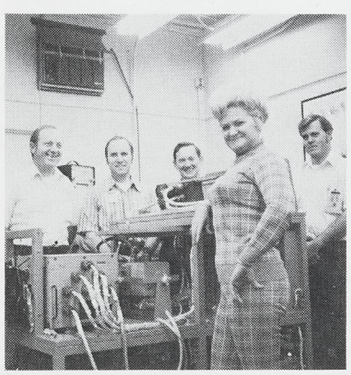
Lucy arrived at Palmdale in April for what was termed a two week assignment. Since then she has played a key role as the program has extended beyond its original scope.

"Unlike the Lucy of comic strip fame, our gal Lucy is a warm, personable person and a valuable asset to the team," said Gene Young, manager.

The modification team working on the radar system consists of Dick Raaness, Bill Lewis, and Lucy from Emerson Electric of St. Louis; Bob Craik, Lee Mabry, Bill Strow, Bob Starling, Duke Frisk, Randy Linn, Harold Fox, Vern Herman, William Barber, Gerald Herman, Barry Wilson and Mr. Young, all of the Avionics Laboratory.

Lucy lives in St. Louis where she owns a condominium and enjoys spending her spare time on her 17-foot inboard, Me 'n Pepe, named after her white poodle which also enjoys boating.

Enjoying her first visit to Southern California, Lucy is just as glad her brief visit turned out the way it did, and good grief, so does the gang working with her!



MEMBERS of the radar modification team and their gal, Lucy.

Mini Credit Unions Serve Many Locations

In addition to the professional staff on hand to serve personnel at the Northrop Credit Union, Hawthorne, there are a number of volunteers that perform Credit Union services for fellow employees at locations other than the main facility.

"These personnel are serving as mini credit unions," explains Marv Peiffer, assistant manager, "and the job they are doing is remarkable. Thanks to them, employees in outlying areas are able to join and utilize the many services offered by the Credit Union."

Facilities and representatives:

Alameda, Sandy Rogers; Berkeley Scientific Laboratories (north), Joyce Marshall; Berkeley Scientific Laboratories (south), Paula Gardner; Century City, Peggy Wood; Crenshaw (AF), Sheri Pruss; Edwards AFB, Betty Belcher; Electro - Mechanical, Georgia Burman; Electronics (Hawthorne), Gail Wise; Electronics (Palos Verdes), Lore Krumreich; Mariposa, Polly Middleton; Moffett Field, Betty Lohman; Northrop Research and Technology Center, Stephanie Johnson; Northrop Pacific, Mildred Williams; Northrop Services, Peggy Edwards; Olson Laboratories, Jo Ann Morgan; Palmdale, Sally Aiken;

Plant Two, Rachel Razzolini; Plant Three, Kay Clark; Precision Products Department (El Monte), Del Wiese; Torrance K-6, Dottie Lane; Huntsville, Ala., Verna Walker; Asheville, N.C., Jean Stanley; Northrop Dakota, Clarice Sevalson; Arlington, Va., Pauline Mueller; Vienna, Va., C. Bailey; Tehran, Iran, Dean Smith; Saudi Arabia, John Tatka.

Marston Goal to Hand Carve Entire 1880 Old West Era

Skip Marston, coordinator, YF-17 Program, Aircraft Division, is a man who likes to plan ahead, especially when it involves his plans for after his eventual retirement from Northrop.

An avid wood carver, Skip has set a goal to hand carve an entire western setting complete with town, cattle herd, wagon train, Indian village, buffalo herd, 20-mule team, and railroad yard and tracks.

The 20-year veteran of the Aircraft Division has set this goal for himself primarily because of an experience he had while serving in the Army Air Force during World War II. "I had come home on a surprise leave and happened to catch my father's retirement party," he explained. "At the dinner there was another man being honored also for 30 year's service to the company and when asked what he planned on doing, he said he didn't have the slightest idea; his work had been his whole life and he didn't have any other interests. He died within one year after his retirement."

Using a scale of one foot to one inch, Skip has carved over 150 figurines of people, animals, and buildings during the 15 years he has been whittling off and on concentrating on the western motif of the 1880 era. He has also gone through 25 pocket knives.

In addition to obtaining valuable "tricks of the trade" ideas from the National Wood Carvers' Association of which he is a member, Skip has the support of his wife Margaret, and the painting expertise of his 16-year-old daughter Terry Lee, and 15-year-old son, Don. His oldest son, Doug, who is also an Aircraft Division employee, is the building construction and lighting expert.

"Roughly 10 to 14 hours are put into each figure as it involves sketching the idea, laying out the most difficult side on the piece of wood, and then doing the actual carving," he said.

Skip has become quite an expert on the life style of the old west for he has been researching each of his ideas as they come to him as well as being well versed in wood carving, woodworking, and whittling.

"I have no idea how large my western layout will be or how long it will take to build it, but that's the challenge of it. I'll meet those problems when I get to them," Skip concluded.

JUST A SAMPLING of the over 150 figurines he has created during 15 years of whittling are displayed by Skip Marston. Skip's eventual goal is to hand carve an entire western setting.

SLIDE SETS ON SALE

Sets of 20 color slides (35 mm) of the Skylab program are now on sale at the Aircraft Division Personnel Activities office. This is a $4.95 value, but is available to employees for just $3.50, including tax.

Packaged in a permanent plastic see-through file, the set features key scenes from the project including liftoff, the docking of the astronauts, magnificent shots of earth, and sensational outer space scenes of the astronauts in action aboard Skylab.

Also, a limited number of Apollo 17 mission slide sets and Space Shuttle Survival program including Apollo, Skylab, Apollo-Soyuz, are available.

March And June Travel Club Trips

The NRC Travel Club has scheduled a meeting at the NRC Clubhouse, Feb. 21, 7:30 p.m., to discuss the Grand Canyon Expedition, June 16 through 22, when travelers will take a raft trip down the Grand Canyon.

Highlight of this meeting will be a movie of what you will experience on the trip entitled "Wild is the River," narrated by R.G. Starling.

Only 30 reservations are available and a deposit of $30 is required.

On the agenda for March is a 21-day fully escorted trip to the Orient departing Mar. 31, returning Apr. 20.

The trip includes visits to Japan, Hong Kong, Bangkok, Singapore and Bali, jet transportation, first class hotels, sightseeing, breakfast and dinner throughout for $1226 per person.

Contact Travel Commissioners Dave Carney, Aircraft ext. 2486 or Jeannie Zubak, Electronics Hawthorne ext. 542 for information.

Comment . . .

The Northrop News will publish in each issue a selection of letters which, in the sole judgment of the editors, are of the broadest general interest. Remember that the best sources for information about Northrop practices are your "Working With Northrop" booklet or your immediate supervisor. Letters should be addressed to "Comment, Northrop News, 172/AJ."

* * *

"In the late 1950's, Northrop policy was to give preference for assigned parking to those employees who participated in a car pool. In view of this country's energy crisis, why has Northrop not responded with some positive action or incentive in the promotion of car pools? A review of all assigned parking spots would disclose ample available spaces exist to permit this policy to be reinstated." — Erroll L. Williams, Aircraft Division.

"Northrop is in the process of re-evaluating the parking situation – due to the number of car pools and buses which are now in operation, plus those that are anticipated. A questionnaire is forthcoming, which will include the information necessary for coordinating the formation of additional car pools and buses through the use of a computer data bank. This information will also help us to evaluate all possible incentives, such as priority parking.

"Northrop is making every effort to cope with the energy problem(s) in such a way that would cause the least inconvenience to all employees. Unfortunately, it is a rather large scale operation and will take several more weeks to implement. Your patience and indulgence will be appreciated.

"Thank you very much for your interest and concern regarding the parking situation. If you have any further questions which might help us in this effort, please forward them to our attention." – Saundra Baumgarner, Transportation, Aircraft Division.

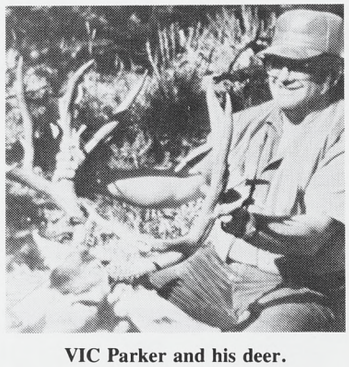
Parker Shoots One for The Record on Recent Deer Hunt

Vic Parker, Electro-Mechanical Division Maintenance, "shot one for the record" on a recent deer hunt near Grand Mesa, Colo. His kill was a 242 Boone and Crockett point non-typical buck that will go into the record book. It requires a minimum of 225 points to be included in the record book.

Chances of getting a buck of this caliber are estimated by hunters to be about one in 10,000. Vic made his kill with a .300 Magnum.

Vic was one of a group of Electro-Mechanical Division employees who accompanied Harold Wooten, Electrical Test, on the hunting trip to Colorado. Harold has been hunting in this area for the past 11 years. Each year he takes some of his fellow employees along.

"And they never fail," he said rather ruefully, "to get a bigger deer than I do. In addition to Vic's record setter, Jim Dortch got a deer with a 29-inch span and Paul Roddan's kill checked out at 35 inches."



VIC Parker and his deer.

CALCULATORS

A special discount on the Hewlett-Packard line of pocket calculators will be available soon to employees through Personnel Activities in each of the Southern California facilities. Offered are the HP 35, 45, 80, 81, and new programmable HP 65 model calculators at a 14 per cent discount from retail price.

A participation of 100 or more buyers is needed for the discount price to be possible, so if you are interested contact Carol Chapman, ext. 441, Electronics Division, Hawthorne.

FILM PACKAGE

A limited number of specially priced film packages will go on sale Monday, Feb. 25, at Personnel Activities in each of the Southern California operations. Included in the package deal are two rolls of GAF 126 cartridge film, one pair of panty hose (one size fits all), and two discount coupons good towards film processing, all for just $1.59, including tax.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Monte Carlo, 1970, sm. eng., p/s, p/b, console, air, $2350. 213-582-1079.

Oldsmobile, 1965 Cutlass, orig. owner, 60,000 mi., w/V-8, a/c, $495. 213-541-5403.

Fiat, 1972, 850 Sport Spider, $1800. 213-679-6271.

Motorcycle, Yamaha, Mini-Enduro, 60cc, $190. 213-378-4959.

Chevrolet, 1960 Impala, air, p/s, p/b, r/h, $300. 213-370-3821.

Super Van, 1972 Ford, paneling, $3000. 213-644-0935.

Dune Buggy, 1959, fiberglass body, wide tires, mags, street legal, $500. 213-542-1165.

Oldsmobile, 1955, 2-dr., auto. trans., $250. 213-370-5990.

Pinto Wagon, 1972, 26,000 mi., a/c, stereo, 4-spd. trans., $2250. 714-995-1866.

Ambassador, 1969 SST, 2-dr., a/c, p/s, p/b, a/t, $850. 714-544-7349.

Pickup, 1969 Ford ¾-ton, auto., 360 c.u., $1295. 213-378-1026.

Triumph, 1960 TR3, $500. 213-370-6431.

Pontiac, 1969 Ventura, 2-dr., auto. trans., $1800. 213-679-3728.

Motorcycle, 1972, Honda CL-350, foot bar, back rest, cover & service manual, $595. 213-291-0025.

Chevrolet, 1973 El Camino SS454, p/s, p/b, a/c, h/duty susp., 23,000 mi., $2995. 213-534-4668.

Pontiac, 1965 Bonneville, all extras, $500. 213-868-3058.

Pickup, 1968 Ford ½-ton, 360 V-8 auto., p/s, r/h, $1150. 213-370-8106.

Porsche, 1962 coupe, 1600 S, $2400. 213-864-0833.

Monte Carlo, 1971, auto. trans., AM/FM, p/s, a/c, $2000. 213-641-2201.

Motorcycle, 1971 Yamaha Mini-Enduro, extras avail., $165. 213-675-6325.

T-Bird, 1963, needs work or use for parts, $150. 213-370-7779.

Mercury, 1971 XR-7, low mi., $2250. 213-372-9308.

Motorcycle, 1972 Yamaha M.C., 250 cc, $525. 213-374-9944.

Motorcycle, 1973 Honda M.C. Elsinore, CR250m, many extras, $850. 213-541-3000.

Pickup, 1953 Ford, 283, auto., new wide tires & rims, $900. 213-370-2171.

Chevelle, 1966, 2-dr., 283, auto., p/s, console, $650. 213-370-1907.

Toyota, 1973 Corona, 2-dr. h/top, auto., air, $3100. 714-847-5938.

Plymouth, 1968 Fury III, 2-dr. h/top, p/s, a/c, auto. trans., r/h, $950. 213-676-3550.

Thunderbird, 1972 full power, Ansen fine spoke whls., $4200. 805-647-6272.

Mazda, 1972 RX2 coupe, stick w/console, air, r/h, $2700. 213-679-3275.

Chevelle, 1964 Malibu, 6 cyl., 1970 eng., $375. 213-679-1885.

Ford, 1963 Econoline van, 170 c.i., 6-cyl. stick, $450. 213-329-2330.

Ford, 1963 Fairlane, $195. 213-834-3290.

Pickup, 1959 Ford F-100, 6 cyl. stk., r/h, w/Pullman camper, $800. 213-943-0623.

Pontiac, 1965 convt., auto., 75,000 mi., $275. 213-597-2832.

Miscellaneous For Sale

Refrigerator, Coldspot, 10 cu. ft., $45. 213-370-3482.

Barrel, for Remington 870 shotgun, 12 ga., full choke, vented rib, $40. 213-379-3485.

Auto Radio, from 1969 Firebird, $25. 213-676-3050.

Stereo, Sears Silvertone, sm. flr. mod., 1 yr. old, $150. 213-674-0339.

Love Seat, velvet, $175. 213-372-2860.

Puppies, Irish setter, AKC, $100. 213-329-6264.

Dresser, 6 drwrs., w/mirror, hardwood, blond finish, $18. 213-630-3888.

Studio Couch, burgundy vinyl, $25. 213-328-2046.

Hasselblad System, $1500. 213-835-3869.

Aquarium, 10 & 40 gal. flameless, w/stand, incl. fish, all aeration equip., $85. 213-644-5432.

Youth Bedroom Group, 3 pcs., walnut, $25. 213-277-2920.

Camper Shell, Six-Pac mod. 6, $150. 213-376-6397.

Miscellaneous For Sale

Desert Air Lamp, $35. 213-675-6020.

Bicycle, men's, coaster brake, $15. 213-376-4831.

Wheel, 7.50 x 16, 8-lug, w/mounted 6-ply tire, $25. 213-676-4973.

Guitar, Gibson J-50, w/hardshell case, $285. 213-372-6647.

Refrigerator, 2-dr., apt. size, copper, 2-yrs. old, $125. 213-272-5042.

Engine, 1968 Plymouth GTX, high-perf. 440, 4-spd., bell housing, trans.& shifter incl., $400. 213-670-5943.

Kitten, Chinchilla Persian, male, wht., 11 wks. old, papers, $75. 213-541-6517.

Couch, hide-a-bed, $75. 213-379-8624.

Washing Machine, Frigidaire, 18 lb. cap., 1½ yrs. old, $125. 213-284-2604.

Dryer, Sears, elec., auto., w/electronic sensor, 3 yrs. old, $75. 213-378-7506.

Carpet, Hi-Lo, avocado, w/pad, approx. 40 yds., $30. 714-968-7987.

Sewing Machine, Brother, zig-zag, auto. buttonholer & embroiderer, port. w/carrying case, $45. 213-372-3589.

TV, Sears Silvertone, 6 yrs. old, 19'' color console, $65. 213-679-2026.

Tow Bar, Cyclone, fits Corvette or other, $50. 213-373-7953.

Dog, white Samoyed, female, 1 yr. old, $150. 213-425-6996.

Distributor, hi-perf. dual point Ducoil w&h H14SB 20°-(B) super stock, $25. 213-377-9723.

Bicycle, boy's, Oxford, 26'' 3-spd., 6 mos. old, $40. 213-889-6178.

Desk Cabinet & bookshelf, boy's, $40. 213-323-3202.

Horse, palomino mare, 8 yrs. old, $350. 714-871-6722.

Chronometer, Hamilton Watch Co. mod. 22, fully gimballed, walnut case, $325. 213-373-3895.

TV, b&w, 23'' console, $45. 213-753-7484.

Axle, front & rear, 1930 Ford, $30, other parts & prices. 213-379-0784.

Mag Wheels, Appliance Co., 14x6 for 240Z or any other 4-lug drum, $65. 213-821-3691.

Cassette Player-Recorder, stereo, $50. 805-482-6125.

Dog, reg. AKC tri sheltie, female, 1 yr. old, $75. 213-676-1401.

Stroller, twin, $20. 213-329-6091.

Hi Fi Components, Altec Lansing AM-FM radio, amp. tuner, Garrard turntble., Lansing spkr., $195. 213-324-8853.

Ski Boat, 18' Kona jet, many extras, $3750. 714-894-9517.

Racing Slot Set, 5 cars, 32 ft. latest AFX track, gun controls, mounted on table, $55. 213-430-8378.

Tent Trailer, Nimrod, sleeps 4, screened-in side room, $250. 714-847-5220.

Wedding Gown, size 8-10, & 5' waist-train, short veil & crown, $35. 213-370-8810.

Wristwatch, Omega Geneve S.S. case, auto. dated, waterproof, $115. 213-388-8814.

Cemetery Lot, in the S.E. section of Valhalla Memorial Park, $250. 213-831-1745.

Camera, 4 x 5 Super Graphic, late model, complete w/carryall case, $295. 213-374-4241.

Love Seat, Lazy-Boy, French blue velvet, never used, $275. 213-377-0669.

Washer & dryer, Sears, 8 mos. old, $300. 213-325-3452.

Typewriter, Remington portable, carrying case, $20. 213-326-1331.

Jacket, suede & calfskin, short, custom made, never worn, $57.50. 213-474-5726.

Wanted To Buy

Bicycle, 3-wheel, 24'' 3-spd. preferred. 213-324-6703.

Stove, gas, 4-burner, w/clock controlled oven. 213-675-2005.

Silver Coins, pre-1964, top price paid. 213-860-2911.

Hillman, 1961 sedan, w/auto. trans. or parts for Easydrive trans. 213-377-3141.

Shotgun, .410 single shot, youth model. 213-644-7079.

Car, sm. or av. size, for trans. use, willing to pay up to $500. 213-675-3130.

Camaro, 1968, '69, or '70, must be in good cond. 714-523-9429.

Free (To Be Given Away)

Pups, part bloodhound & cockapoo. 213-973-5477.

Hand Brake, automobile-type, for paraplegic person. 213-641-4047.

Pup, collie, 12 wks. old. 213-545-4403.

Rentals Wanted

Cabin, near Idyllwild to sleep 4, for 3-4 wks. this summer, room for 2 horses. 213-375-5856.

COM-BUS ROUTES BULLETIN

(Continued from page 4)

8 a.m.-4:42 p.m. Work Shift — No. San Fernando Valley (NA#3)
6:40 a.m. Devonshire & Reseda Bl. (Behind EXXon Station)
6:50 a.m. Devonshire & Langdon (Behind Holiday Hdw.)
7 a.m. Hattaras & Sepulveda (Alexander's Parking Lot)
Bus Captain: L. A. Geib, Aircraft ext. 4975
Asst. Captain: Bob Rothstein, Aircraft ext. 1211

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8 a.m.-4:42 p.m. Work Shift — No. Orange County (NA#4)-Artesia Fwy.
6:30 a.m. Lincoln & Newport Freeway-Orange (Safeway)
6:45 a.m. Orangethorpe & Lemon-Fullerton (Orangefair Shopping Center)
6:58 a.m. Orangethorpe & Beach Bl.-Buena Park (The Treasury)
Bus Captain: Marge Bowser, Aircraft ext. 5167
Asst. Captain: John Goodman, Aircraft ext. 4151

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8 a.m.-4:42 p.m. Work Shift — No. Orange County (NA#4A)-Artesia Fwy.
6:30 a.m. 17th St. & Newport Freeway-Tustin (Ralph's Market)
6:40 a.m. The City-Garden Grove-Across from Penny's Auto Center
7 a.m. Orangethorpe & Valley View-Buena Park (Union 76 Station)
Bus Captain: Don Ross, Hawthorne Electronics ext. 656

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8 a.m.-4:42 p.m. Work Shift — South Orange County (NA#1)
6:30 a.m. Brookhurst St. & Adams Ave.-Huntington Beach (Bob's Big Boy)
6:40 a.m. Brookhurst & Warner-Fountain Valley (Linbrook Hardware)
7:05 a.m. Bellflower Bl. & San Diego Freeway-Long Beach
Bus Captain: Paul Kelly, Aircraft ext. 1737

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8 a.m.-4:42 p.m. Work Shift — South Orange County (NA#5)
6:35 a.m. Edwards & Edinger-Huntington Beach (Pizza Parlor)
6:40 a.m. Westminster & San Diego Freeway (Albertson's)
6:45 a.m. Cerulean & Lampson (Valley View Shopping Center, Texaco Station)
6:50 a.m. Seal Beach Bl. & Rossmor Center (Fox Theatre)
Bus Captain: Paul Eckroth, Aircraft ext. 1465, 1477

PROPOSED ROUTES

Preparations are being made for starting new Com-Bus routes for 7 and 7:30 a.m. shifts. Those interested should contact the following:

Orange County via Artesia Freeway — Dick Parrish, Aircraft ext. 4677
LaHabra-Whittier-South Gate-Downey area — Bruce Schroer, Aircraft ext. 1293

The Industrial Relations office at the Electro-Mechanical Division has Orange County Transit District bus schedules available for employee use.

Lost

Wedding Band, gold, 8 sm. diamonds centered on front of band, reward offered, lost 1-14-74, 2nd flr. eng. science ctr. ladies restroom. 213-772-7859.

Personals

Ride Wanted & to share, vicinity Artesia Blvd. & Woodruff Ave., Lakewood, to Hawthorne, 7:30 a.m.-4:12 p.m., Aircraft ext. 4212, 213-867-5809.

Share Ride, 17th & Newport to Hawthorne, arr. 7:45 a.m., lv. 5:15 p.m., Aircraft ext. 1615, 714-544-7349.

Ride Wanted, 23800 & Western, Sepulveda & Western, Lomita & Western, to NRTC Bldg., Gate 10, 8 a.m.-4:42 p.m., Aircraft ext. 2521, 213-326-6456.

Need Ride, vicinity of La Brea & Arbor Vitae, Inglewood, to NRTC Bldg., 7 a.m.-3:45 p.m., Aircraft ext. 2521, 213-674-1847.

Ride Wanted, Centinela & Florence, Inglewood, 7:18 a.m.-4 p.m., Aircraft ext. 1191, 213-674-4563.

Ride Wanted, Crenshaw & Pacific Coast Hwy., to Hawthorne, 7:30 a.m.-4:12 p.m., Aircraft ext. 2351, 213-325-5245.

Typing in my home, evenings, weekends. 213-641-5222.

Car Pool, from Silverlake, Los Feliz area, to Hawthorne, Aircraft ext. 1701, 213-665-2427.

Rider Wanted, to join 3-man car pool vic. intersection of Ventura & San Diego Fwys. to Hawthorne, 7 a.m.-4 p.m., NRTC ext. 4434, 213-789-3456.

May I express my deepest appreciation of all my Northrop friends for their many good wishes, lovely party & gift they gave me on my retirement, YUMA STONE.

My sincere thanks to all my fellow employees for their kindness & comfort in the recent illness & passing of my wife, Dorothy. LEONARD WOLSLAGER.

Sincere appreciation & thanks to my many friends at Northrop for the wonderful going away party & gifts upon my retirement. ED CARAWAY.

Really appreciate all the beautiful flowers, get-well cards from Northrop friends. NORMA TOLIN.

Car Pool, Valley area, anywhere off Ventura Fwy.-San Diego Fwy. to Hawthorne, share expenses, 1:12 a.m.-8 a.m., Aircraft ext. 1904, 2440. 213-347-2665.

Ride Wanted, Centinela & Washington Pl., Culver City, to Mariposa, 1st shift, 213-391-5403.

Ride Wanted, Sat. & Sun., 136th & Inglewood Ave., 7 a.m.- 1 p.m., 213-644-7486.

Car Pool, Long Beach Blvd. & Willow, Long Beach, to Mariposa, 7 a.m.-3:42 p.m., Aircraft ext. 6330, 213-427-1164.

Personals

Thanks to my many friends at Northrop for the flowers & messages of sympathy during the loss of my husband, Gaylord "Stubby" Younkin. MRS. GAYLORD YOUNKIN & FAMILY.

Graduates of Redondo Union High School class of '55, call 213-371-7478.

Ride Wanted, 7 or 7:30 a.m. shift, Hawthorne, from Hermosa Ave. & 22nd St. area, Aircraft ext. 1408.

Ride or riders wanted, San Gabriel Valley area, 7 a.m.-3:42 p.m., Aircraft ext. 1095, 213-280-5073.

Ride Wanted, Market & Manchester, Inglewood, 7 a.m.-3:42 p.m., Aircraft ext. 4397.

Ride Wanted, from Del Amo & Paramount Blvd. in Lakewood, 7:30 a.m.-4:12 p.m., Aircraft ext. 1791, 213-423-2901.

Furniture, used, for donation to needy family, from bedding to appliances, all types, contact NorAid Chairman Jo Roth, Aircraft ext. 1232.

For Sale Or Trade

Dune Buggy, 1961, VW powrd., off road 2-seat, completely rebit. drive train, $700 or trade for reel-to-reel tape recorder or deck. Must have sound on sound capabilities & mikes. Prefer TEAC or Akai. 213-542-5227.

Knitting Machine, Sears Orion, dble. bed, instructions, $200 or trade for piano. 213-372-2226.

Motorcycle, 1966 BSA, 650 cc eng., extended front end, $600 or trade for Volkswagen in good condition. 213-599-1822.

Typewriter, manual Remington upright, in excellent condition for any make manual portable. 213-833-6045.

NORTHROP NEWS

Vol. 32 **No. 2**

Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey; editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Peter Goodall, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher. Correspondent: Northrop Hueneme and editor, Spanish language edition, Joe Anguiano.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

Skiers Planning Mammoth Trip

The Northrop Ski Club will sponsor a weekend of skiing fun at Mammoth Mountain, Mar. 8-10. Price per person is $35 and includes bus fare, two nights lodging, refreshments, and a wine and cheese tasting party Saturday night. For further information contact Rick Crane, ext. 6417, Mariposa, or John Rufino, ext. 541, Palos Verdes.

COURSE OFFERED

A course designed to qualify amateur radio operators for the novice grade license is being offered by the Northrop Radio Club, according to Bob Cobb, club commissioner. The course will begin Tuesday, Feb. 26, at 7:30 p.m. in the NRC Clubhouse. Interested persons should contact Bob on ext. 663, Hawthorne.

The Novice class license offers an ideal way to get started in amateur "ham" radio and permits you to contact stations across town, across the country, or any part of the world.

SHARE THE RIDE

Fill out CARD
& return to Joan Jones
(Employment office---- Hawthorne)

Lore Krumreich
(Personnel Admin. ---- Palos Verdes)

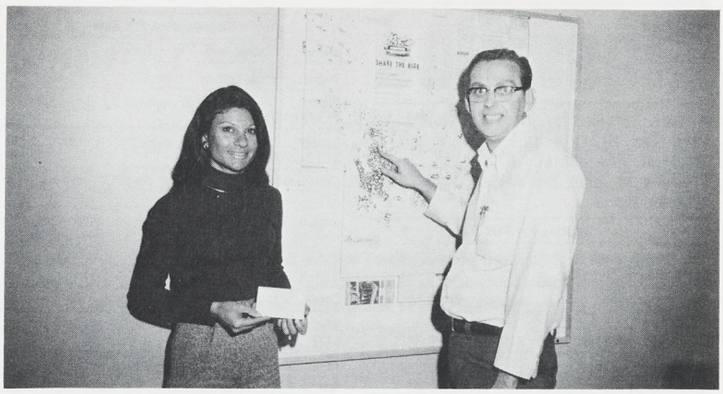
Camera Club Sets Slide Competition

The Camera Club will hold its first inter-club slide competition Tuesday, Mar. 12, at 7:30 p.m. in the NRC Clubhouse. Subject matter will be buildings. For contest details contact John Welsh, ext. 2081, Aircraft, or Jeanne Saxon, ext. 541, Electronics, Hawthorne.

**IS IT NEWS?
CALL EXT. 4273
HAWTHORNE**

THREE STORY house built circa 1880 is home for the Paul Savage family in Dover, Del., where Paul is assigned as field representative to Dover AFB, and the C-5 program.

FROM LEFT, Michelle, Beth, Margrett, Paul, and Donna, pose casually in living room next to the Steinway Grand piano which plays mysteriously during the night. As yet, they have been unable to catch Mr. Joe during one of his impromptu concerts. Photos by Capt. Steve Bird.



EXPLAINING the benefits of being in a car pool is Duane Henry, Contracts Estimating, to Marie Hecker, Cost Control, Hawthorne. Duane commutes daily from Orange County with Bill Baker, and John Bowman. The map is located in Employee Relations and assists individuals setting up car pools.

Refunds Available to Those Paying More Than $85 SDI

If you worked for two or more employers during 1973 and received more than $8500 in wages, you may qualify for a refund or credit from the State of California, according to a notice from the Department of Human Resources Development.

To be eligible for the claim, you must have met the following conditions: 1) Received more than $8500 in wages during 1973 working for two or more California employers, 2) Had deductions for disability insurance (either state or voluntary plan) taken from your wages, and, 3) The total of such deductions exceeded $85.

Information concerning pay deductions, wages, and other data necessary to complete your claim may be secured from copies of stubs or paychecks in your possession, or from employers. You cannot claim wages earned in and reported to states other than California. See your department bulletin board for further details.

Huge House Has One Drawback — A Ghost!

For Paul Savage and his family of six, moving to Dover, Del., was a time of mixed emotions, as had been his previous assignments which he had encountered as a field service representative for the Operational Support Department, Hawthorne.

One of their biggest problems was finding suitable housing for all of them and after looking for two months came upon a large three-story house which they later found out was built in the 1880s.

But one thing they weren't told before moving in was that the grand old house was haunted!

While attending a Labor Day picnic the Savages were informed that their house had been built by a gentleman simply called Mr. Joe and that at the time of his death he decided "not to leave" his home and according to tradition, still remains.

Not all of the neighborhood residents are in agreement on the stories concerning the old house including the Governor who lives three doors down from Paul. Delaware's First Lady conducts tours through the State House which holds many early American antiques.

But to the majority of the citizens in Dover, the Savages are living in Dover's Haunted House. Further stories lend some weight to this, according to Paul.

The previous owners of the house have all had sad events take place while they lived in the house including an unexplained death; a serious fire to a family while they were moving in; mysterious illnesses; and sightings by many residents of who they call Mr. Joe.

Paul's experience with Mr. Joe to date has centered around their Steinway Grand which suddenly begins to play during the night, but when they sneak downstairs, there isn't anyone there. The front door has a bad habit of opening and closing during the night also, but upon checking they find it closed and locked!

During the current energy crisis the Savages are having trouble getting sufficient fuel to heat the big house properly so therefore are considering a move to a smaller house. But as Paul noted, "I'm sure there will be people in Dover who will swear that the move was made for more 'spiritual' reasons!"

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 32, No. 3 | March 1974

Navy Orders 20 Airborne Omega Sets for C-130s

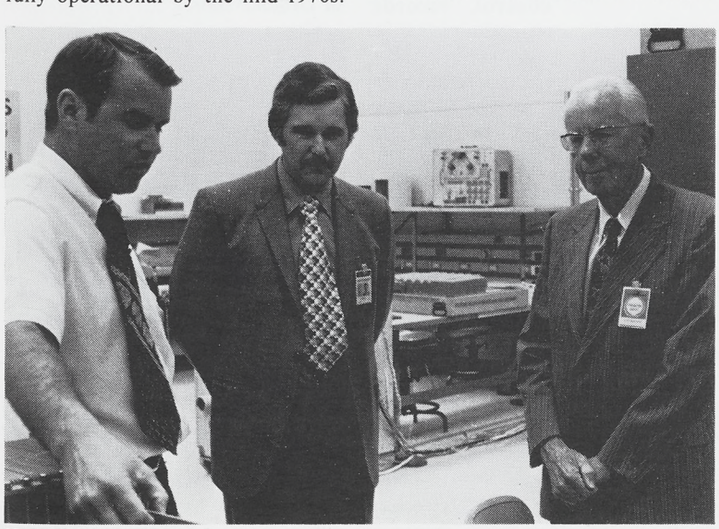
The Electronics Division has received a contract for $1.67 million from the United States Navy to produce 20 Omega radio navigation sets for Navy C-130 Hercules aircraft.

The contract, let by the U.S. Naval Air Systems Command, Washington, D.C., includes subsystem integration, data engineering, reliability and first article testing. Delivery of the first unit is scheduled for later this year.

The receivers, designated AN/ARN-99(V)4, will be built at the Hawthorne facility under the direction of Chuck Jones, program manager, and Warren Weimer, project engineer. The receivers will feature a 16 k memory capability which is an increase from the 8 k memory of earlier models.

Bill Jackson, Marketing representative for the program, noted that Northrop's airborne Omega is already in production for the Navy's C-9B and P3C aircraft and that it has been specially modified for application to the fleet's nuclear attack submarines.

Omega is a very low frequency radio navigation system being implemented worldwide to serve both civil and military users as a general purpose navigation aid for ships and aircraft. The system is to become fully operational by the mid-1970s.



JERRY COLMERY, left, senior engineer, Systems Integration Unit, demonstrates the Airborne Omega Navigation System to John K. Northrop during his visit to the Hawthorne facility. Donald Chaney, center, conducted the tour. See story, page 8.

COEDS FROM San Pedro High School pose with their sponsors at start of Student's Business Day held Mar. 5 at the Palos Verdes facility. From left to right, front, Lore Krumreich, program coordinator; Cathy Oakes, Cindy Andrich, Annie Li and Mireya Lee. Back row, Marion Owens, Pat Carr, Gail Johnson, and Liz Herron.

Division Hosts San Pedro Coeds for Business Day

Four San Pedro High School senior coeds were the guests of the Palos Verdes facility Tuesday Mar. 5 as part of the Electronics Division's annual Student's Business Day and the high school's own Girls Day in the Community program.

Under the direction of Lore Krumreich, Employment representative for Personnel Administration for Palos Verdes, the Business Day enables high school coeds striving for a career in the secretarial field to experience an actual on-the-job situation in industry and get a better understanding of real work conditions.

Participating from San Pedro were Cindy Andrich, Annie Li, Cathy Oakes, and Mireya Lee. The girls were selected by the school for their academic achievements in courses related to secretarial sciences. All four coeds will enroll at Harbor College as secretarial science majors in the fall.

"This marked the first time Palos Verdes had participated in the program," Lore explained, "And the enthusiasm expressed by the sponsors and all departments involved was really great. I want to thank in particular Messrs. Whitman, Norton, Vogel, and Merlino, for allowing their girls to serve as sponsors and for the cooperation their personnel gave us."

Secretaries serving as sponsors were Pat Carr, Project Management; Gail Johnson, Accounting; Marion Owens, Diagnostic Safety System Group; and Liz Herron, Product Support Group.

The girls worked in the various departments in the morning hours and were then served lunch followed by an address and question and answer session by Hal Janssen, manager, Division Relations and Services Department. The coeds then returned to their sections to conclude their work assignments.

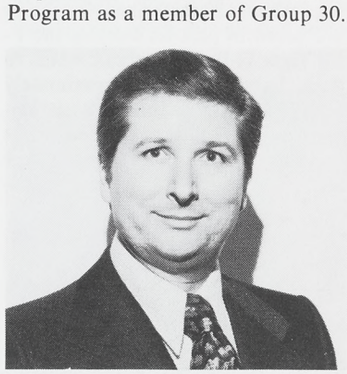
Lipscomb Named Vice President of Avionics Dept.

A. B. Lipscomb has been appointed vice president and manager of the Avionics Department, according to David N. Ferguson, Corporate vice president and general manager, Electronics Division.

Mr. Lipscomb replaces Roy Kaufold who was named to the position of president of Wilcox Electric, Inc., Kansas City, a subsidiary of Northrop.

Mr. Lipscomb has held a variety of managerial positions during his 14 years with Northrop including manager, Tactical Avionics Department; director of Navigation Marketing and Product Support; chief of Product Integrity for the Special Projects Section; and program director for Navigation and Attack Systems, Navigation Department.

A graduate of Southern Methodist University with a bachelor of science degree in electrical engineering, Mr. Lipscomb has completed subsequent work toward a master's degree at UCLA. He is a member and past officer in Eta Kappa Nu, an honorary electrical engineering association, and Sigma Tau, an honorary engineering fraternity. Mr. Lipscomb has participated in the UCLA Executive Program as a member of Group 30.



MR. LIPSCOMB

SAVINGS PLAN

Any eligible hourly or salaried employee who wishes to change their contribution amount in the Payroll Savings Plan, or option directing the investment of their contribution, must complete an application card and submit it to Personnel Records no later than Mar. 31.

Earnings, Sales Increase; Common Dividend Upped

Northrop announced that holders of its common shares will receive a dividend increase.

The board of directors voted a dividend of $0.28 a share payable Mar. 23 to shareholders of record Mar. 4, 1974. Previously Northrop had paid $0.25 on the common stock every quarter since Dec. 1961. The increase is the maximum currently allowable on a quarterly basis under the government guidelines.

The board also declared a quarterly dividend of $0.3625 per share on Northrop $1.45 cumulative preferred stock payable Apr. 6 to preferred stock of record Mar. 20, 1974.

The dividend action was based primarily on the backlog of firm orders of over $1 billion, the recent growth in sales, and the prospect for continued increases in earnings, according to President Thomas V. Jones.

An increase in net income of $2.93 a share reflects several factors, including the benefit of higher sales volume, profit on the purchase of subordinated debt, and increased royalties. Offsetting the gains from these areas, to some degree, was an increase in interest and other expenses, combined with temporarily lower profit margins on certain projects, expenses resulting from certain research and development efforts and the writeoff of higher than anticipated development costs on a fiberglass barge contract.

The beginnings of a recovery from the dip in earnings of the last two years and the outlook for a return to the upward trend of sales and earnings which characterized the 1960s are based in part on sales of the F-5E Tiger II fighter aircraft which to date have totaled approximately $176 million. In addition, the company has a backlog of unfilled orders for the F-5E amounting to $439 million. The F-5E currently accounts for about 10 per cent of total annual sales.

The company earned $11,608,000, or $2.93 a share, in the calendar year 1973. This compares with earnings of $11,136,000, or $2.57 a share, in the previous year. Pre-tax earnings for the year were $20,083,000.

Sales in 1973 increased to $698,-967,000 from 1972 sales of $573,-749,000.

Backlog of firm orders amounted to $1,166,000,000 at Dec. 31, 1973, highest in the company's history, up from a backlog of $768,000,000 a year earlier.

In the fourth quarter of 1973, the company earned $5,200,000 or $1.34 per common share on sales of $231,-839,000, including an after-tax profit of $1,436,000 resulting from the purchase of $10,150,000 face amount of the company's subordinated notes. The earnings figure compares with $3,209,000, or 78 cents a share on sales of $159,301,-000 in the fourth quarter of 1972.

On a fully diluted basis, assuming conversion of the convertible debentures and exercise of outstanding options, the company's earnings for 1973 equaled $2.67 per share compared to $2.22 per share for 1972 and $1.26 per share for the fourth quarter of 1973 compared to 65 cents for the fourth quarter of 1972.

There were 3,747,940 common shares outstanding on Dec. 31, 1973, compared with 3,932, 931 outstanding a year earlier. The decrease in shares resulted from company purchases of 186,710 shares of common stock.

DR. HICKS welcomes members of ASTM subcommittee on Glazing and Transparent Enclosures to Northrop during February meeting. Dick Morozowicz, seated at front table left, is chairman of the subcommittee.

Olson Seeks Data On Gas Vapor Control

Olson Laboratories, Inc., is seeking information on vapor recovery systems suitable for controlling gasoline vapor emissions. These emissions occur during tanker refueling of the station's underground storage tanks, station refueling of motor vehicle fuel tanks, and venting of the station's storage tanks. The vapor recovery systems of interest to Olson may control one or more of these emission sources.

Olson, a major environmental science company and a subsidiary of Northrop, seeks the information for a study the company is conducting for the American Petroleum Institute.

"We are seeking information on any type of system developed for vapor recovery control, either developed or in the prototype state," R. L. Gibney, Olson president, said.

THE ANAHEIM Chamber of Commerce and the City of Anaheim honored Northrop's Electro-Mechanical Division for "outstanding community service." Joe Wade, Chamber president, left, and Mayor Jack Dutton, second from right, presented citations to Frank W. Lynch, center, division general manager, received the awards. Also present were Richard McMillan, second from left, manager, Processing Engineering, and Merrill E. Skilling, chief plant engineer, third from right, who were honored for their contributions to environmental and energy conservation in the city. The Chamber's resolution also commended Northrop's Corporate Communications for assistance to the city's energy conservation program. I.G. Edmonds, right, represented Corporate Communications at the ceremony.

Davidson, Person Appointed To New Corporate Positions

R. J. "Dave" Davidson has been appointed director, Corporate Administrative Services, reporting to J. H. Bruce, vice president, Industrial Relations.

Mr. Davidson has been associated with Northrop since 1969, and replaces Ray Detmers, who has been assigned to the Pacific Far East office in Hong Kong.

Mr. Davidson

Prior to this appointment, Mr. Davidson was Corporate administrator, EEO Programs. He will be responsible for corporate wide policies and procedures, forms control, records management, and administrative and budgetary support for the senior vice president, Administration. He will have further responsibility for Corporate office mail services, the switchboard and receptionist, graphics, food services, periodicals and books.

Mary E. Person is the new Corporate administrator, Equal Employment Opportunity Programs, it has been announced by J. H. Bruce, vice president, Industrial Relations.

Mrs. Person

Mrs. Person comes to Northrop from Xerox Corporation where she was manager, Employee Relations at the Data Systems Division in El Segundo. Previously she was with Litton Industries as manager of Urban Affairs.

She received a B.A. degree in mathematics from UCLA.

Mrs. Person is assigned to the Corporate Administrative Services organization.

World Wide Wilcox Receives Contract

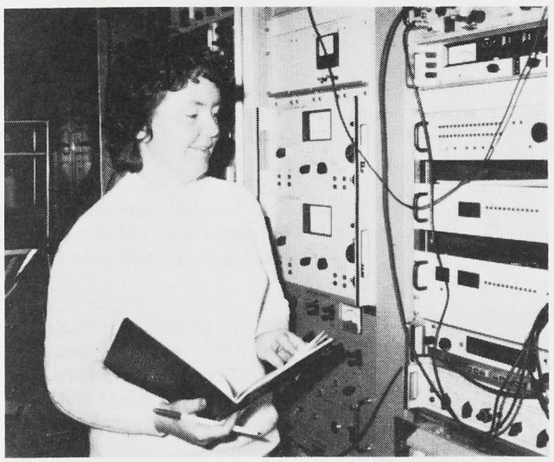
World Wide Wilcox, Inc., a subsidiary of Northrop, has received an $11,687,602 contract from the Turkish Government for a navigational aid project at Yesilkoy International Airport, Istanbul.

The project includes construction of a traffic control tower and associated buildings, and installation of radar, VHF and UHF communications systems, instrument landing system, and telephone, teletype, meteorological, message switching and closed circuit television equipment.

The navigational aid project is part of the major modernization program at the international airport serving Istanbul.

World Wide Wilcox, headquartered in Vienna, Va., is the international marketing and field service organization of Wilcox Electric Co., Kansas City, Mo., a wholly owned subsidiary of Northrop. Nick Oktay, World Wide Wilcox chief of Engineering, has been appointed program manager for the Istanbul project, which will be completed in 25 months.

Camera's Eye Looks At Northrop Women

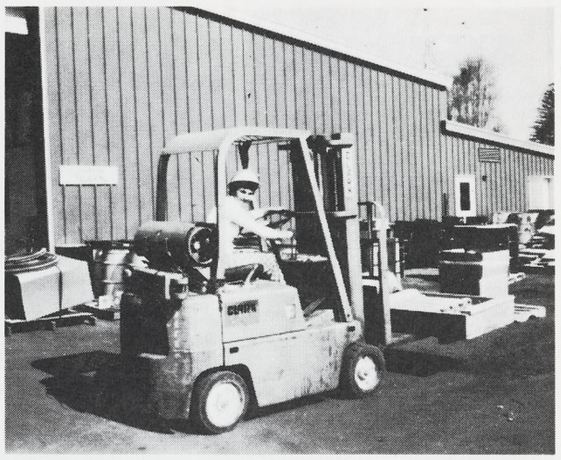


PPD TEST Engineer Peggy Mahoney checks the readout from a drift test on the ESG gyro. Peggy has been with Northrop for two years and has been working on the ESG data acquisition and reduction software system. She is a graduate of Northeastern University.

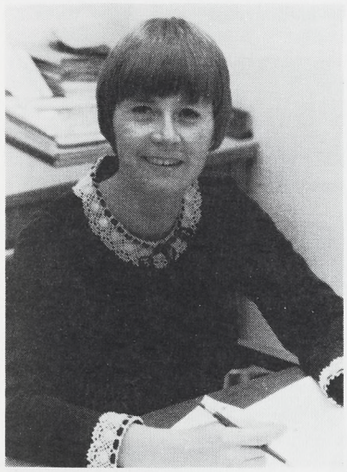
Woman's Work? No Such Thing At Northrop

Woman's work? There is no such designation at Northrop. Women have long been offered the opportunity to do just about any kind of job they are individually qualified for. Here the camera's eye takes a look around the company's widely diversified activities to spotlight a few of our women employees at work.

This is the first of a series illustrating Northrop women at work.

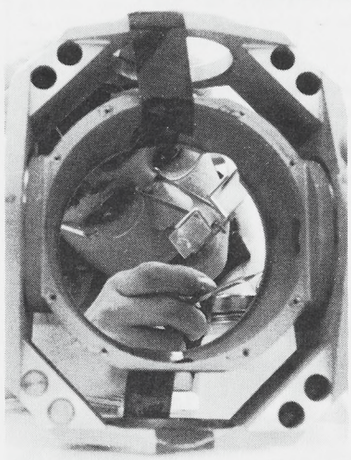


LADY DRIVER of forklift at Northrop Hueneme is Valerie Tautz in Receiving. She recently received her certificate as a forklift driver. Besides being the only woman qualified to operate the vehicle, Valerie is studying to become a lawyer.

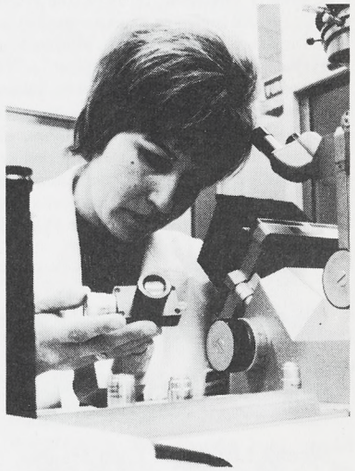


LINDA AULT, senior engineer, Laser Systems Design Analysis Laboratory, Northrop Research and Technology Center, is working on improvement of laser propagation and system scaling models, and contributed to the preliminary design of laser pointer and tracker for the high energy laser weapons system.

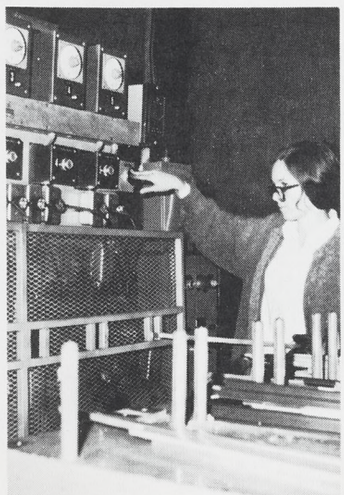
MANAGER LINDA BENNETT goes over checklist with Leadman John Iwanczyk as part of her job in the Ventura Division's Plastics Shop. Ms. Bennett manages the Miscellaneous Plastics operation which produces parts for the F-5E, F-5F, YF-17, target drones and other Northrop programs.



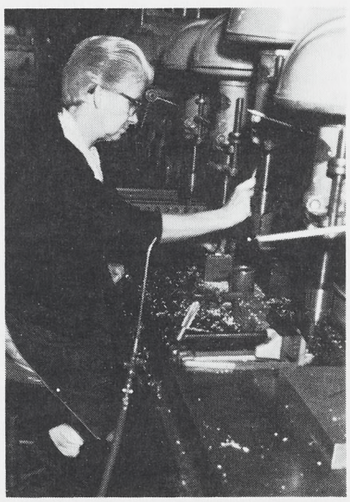
LENA MORALES, Electro-Mechanical Division, makes delicate adjustments on a gimbal assembly for Northrop's Target Identification System, Electro-Optical. Her meticulous work is an example of the care and precision Northrop's women employees put into the company's products.



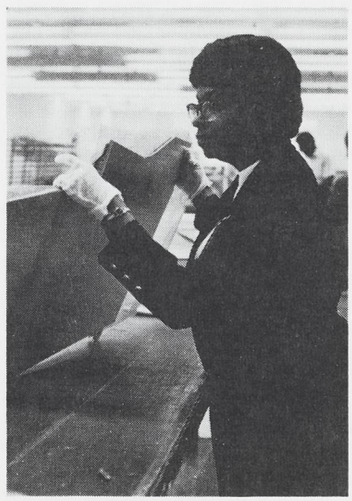
OPERATING the metallograph in the Materials and Process Laboratory, Electronics Division, Hawthorne, is Lucy Tamariz, engineering technical assistant. Lucy is responsible for analysis of metallurgical micro-sections using the metallograph which enlarges and photographs sections.



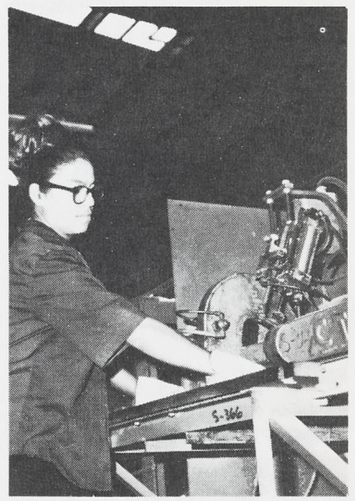
DIANE ACERO of Northrop Architectural Systems at the control panel of a 570 window panel fabrication machine.



RUBY MASTERSON has been a machinist with the Electro-Mechanical Division for 21 years.

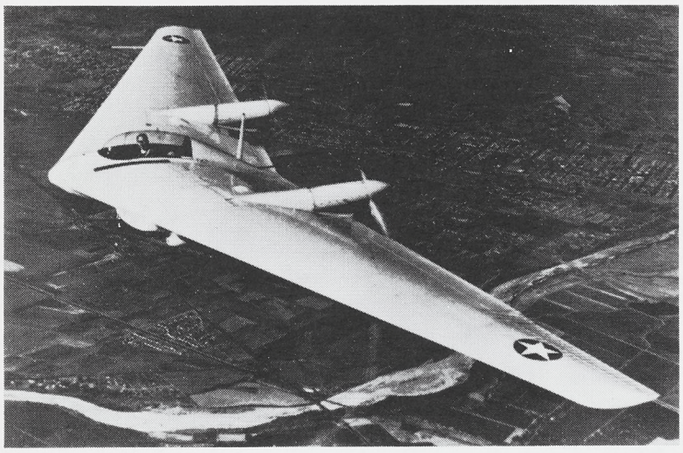


SENIOR ENGINEER Marjorie St.Cyr inspects bonded part at the Aircraft Division, Hawthorne.



MARTHA OLMOS on duty at Northrop Architectural Systems operating a 570 window saw.

Historically Speaking . . .



FOR MANY years airplane designers had realized that by reducing parasite drag on aircraft (drag caused by the shape or form of the aircraft) its performance could be greatly increased. In 1940, the N1M was developed. This was a true all-wing design which served as an experimental model to survey the flying characteristics and performance of such aircraft. Hundreds of flights were made with this airplane using every conceivable flight configuration. The next step was to investigate the application of the all-wing principle to heavy bombardment types. In 1942, four 60-foot scale models of a much larger airplane were constructed which were designated the Northrop N-9M (shown above). These airplanes were used for pilot training and as test airplanes. An extensive flight test program was initiated in which the airplanes were stalled, spun, looped, and flown in every possible loading condition. The N-9M was the forerunner of the forthcoming larger Flying Wing B-35s and YB-49s. It was powered by two 300-horsepower Franklin engines and had a gross weight of 7100 pounds.

Lieutenant Hughes Named Top Graduate of UPT Class

Second Lieutenant Glen Hughes, 25-year-old son of W. D. (Joe) Hughes, engineering specialist, Aircraft Division, was named the top graduate of UPT Class 74-05 at Laughlin AFB, Tex.

In commencement exercises held Feb. 8, Lieutenant Hughes received the Air Training Command's Commander's Trophy, the outstanding academic and flying awards, and the outstanding graduate award.

GLEN HUGHES AND T-38 TRAINER

Thirty-four students received their wings from the Del Rio-based Air Force school after 48 weeks of pilot training in T-41, T-37, and T-38 aircraft.

Glen is currently taking C-141 flight training at Altus AFB, Okla., before beginning wilderness survival school in Washington and finally his first assignment in June at Norton AFB, Calif.

A graduate of UCLA with a bachelor of science degree in engineering, Glen entered the Air Force through the ROTC program at UCLA.

Joe, who attended the graduation ceremonies with his wife Margaret, noted, "As parents, watching Glen receive the awards and accolades of his fellow students and instructors was a thrill that we won't soon forget. Also, having been involved with the T-38s for over 10 years at Northrop, it was an additional thrill to hear the glowing reports on the aircraft's performance from the instructor pilots and to see the real tight, four-ship formation flyby during the ceremonies."

Northrop Pacific Establishes Suggestion Award Program

A uniform method for employees to share in the savings resulting from cost reducing suggestions they have originated has been launched at Northrop Pacific, Inc., according to Frank Merrell, plant manager.

The Suggestion Award Program was initiated Feb. 14 and enables personnel to earn cash awards for those suggestions which reduce cost of products, operations, services, or improve safety, quality, work conditions, or directly cause the development of a new and profitable product.

"Cost reduction in the production and operation phases has always been of primary concern to us, and with the current energy crisis as well as every increasing competition in our field, we are constantly searching for innovative ideas which will help us to meet these cost problems," Mr. Merrell explained.

"We believe our own personnel are our best source for cost reducing ideas," he said.

In outlining the suggestion program, John Meehan, program coordinator, pointed out that employees submitting suggestions would receive acknowledgement that their idea was being processed by the award committee and would be given the reference number and name of the coordinator assigned to evaluate the idea. Names of individuals earning cash awards will be posted on bulletin boards.

Employee Suggestion Forms may be obtained from the "Cash for Ideas" centers located in Plants One and Two, and when completed, drop into the boxes at either location or forward to the Suggestion Program coordinator.

"The employee response was immediate," Mr. Meehan noted. "The next morning I checked the suggestion boxes and all the forms were taken."

Under the program a minimum award of $10 will be awarded providing they are not inherent in the originator's job classification or regular work assignment.

The maximum award that may be made under the Suggestion Award Program will be determined by the awards committee and approved by management.

'THAT'S ALL there is to it' assures Raive Beeks, right, leadman, Pylon Assembly, as Judy Brace, assembler, enters a suggestion for consideration.

A LANDMARK since 1897, the clock over Precision Products Department's Plant Two now wears Northrop Corporation on its face.

IS TICKING AGAIN
Big Northrop Timepiece

Since 1897, the huge clock atop the tower at Precision Products Department's Plant Two has been a well-known landmark for the people of Norwood, Mass. Until the great hands of the clock became still, years ago, thousands of people set their watches and clocks by it every day as a matter of habit.

Originally, Plant Two was the home base for Norwood Press, and most of the work done at the location was bookbinding. Now, a much more sophisticated type of operation goes on. With the manufacture of gyroscopes for missile and space ships, the plant has been caught up in the rapid pace of the space age.

However, the clock remained in the past. It still had the lettering for Norwood Press on its face, and the hands had stood immobile for many years.

Plant Engineer Gerry Haggerty recently undertook a complete overhaul of the clock to get it working again, and had Northrop's name replace the old Norwood Press.

"The hands had to be repaired, cleaned up and repainted," says Gerry. "The mechanism had to be cleaned and lubricated. The wind-up weights and counterweights had to be reset, and the face of the clock had to be weather caulked and repainted. Needless to say, a lot of work had to be done.

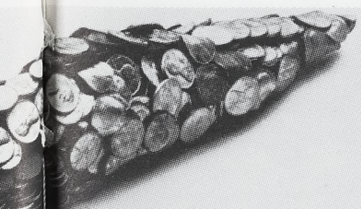
Fixing the Clock

"I had always wanted to do this sort of thing, fix the clock and make it Northrop, so when the possibility came about this past November, I was really enthused. We had to make some repairs to the roof, so I figured that while we were up there, why not bring the old timepiece back to life.

"Fixing the clock required some hard work, but changing the name required something else. We had to make 20 letters out of sheet lead. This meant melting the lead down to the proper size sheets. Then we cut the letters out, using the original design, with a bandsaw. After painting them gold, they were ready to be bolted to the face of the clock.

"You can't imagine the satisfaction I get when I look out my office window and see the big Northrop clock giving the right time. It's a perfect example of reviving an old tradition, yet bringing it up to date at the same time."

THE ADVERTISEMENT on the left, will appear in the April and May issues of Fortune Magazine, and in some editions of Time and U. S. News and World Report. It is the first of a series on Northrop technology which will be published in the coming months.



We make every penny count.

And the savings add up in a hurry.
Our F-5E International Fighter is but one example. We've just begun to deliver the 500 aircraft already on order. By carefully structuring the production program, we helped save F-5E purchases some $20 million.
Cost-conscious management. Northrop is committed to it. And has been for 20 years. We manage technology to make it a creative tool. In design. In manufacturing. To make things simpler. More efficient. To pare costs.
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The result: better products, built better. The F-5E. The two-seat F-5F. The T-38 for the U.S. Air Force, the most advanced demonstration yet of the low-cost lightweight fighter concept. Technology that makes sense. Simpler. More efficient. Less costly to buy, to use, to maintain.
Aircraft. Communications. Electronics. Construction. Northrop Corporation, 9900 Century Park East, Los Angeles, Calif. 90067 U.S.A.

NORTHROP

Hobby of Model Airplanes Leads to NASA Contract

Bob Vaughn, senior engineer, Aircraft Division, Edwards AFB, is an avid flying enthusiast with one big difference — his airplanes range from 3 to 12 feet in length and are flown from the ground.

During the 30 years that he has worked on his hobby of model airplanes, Bob has developed some rather advanced designs in aircraft especially of the radio controlled variety. He is a member of the Antelope Valley Tailwinds Radio Control Club.

Consequently, he was contracted by the National Aeronautics and Space Administration to design and fabricate a model to be used in one of NASA's research projects utilizing remotely piloted vehicles (RPV).

A seven-and-a-half-foot span, radio controlled airplane, designed and built by Bob, has already been flown 30 times at the NASA Flight Research Center to verify the aerodynamics of an RPV which will operate at 70,000 feet altitude and identical to Reynold's flight conditions.

Under the Mini Sniffer Project, NASA is developing a small, remotely piloted sampling vehicle capable of encountering and sensing the effluents produced by aerospace vehicles flying from ground level up to near 100,000 feet.

The three primary segments of the project include: preliminary aerodynamic tests using Bob's model; full scale prototype vehicle tests with an airbreathing engine and operating sensor equipment but limited to 20,000 foot altitudes; and actual vehicle tests at altitudes above 70,000 feet.

Bob's model represents a 40 per cent scale version of the NASA aircraft which will have an 18-foot wingspan and gross weight of approximately 145 pounds with a 25-pound payload capability. The Mini Sniffer will consist of a lightweight sailplane type structure propelled by a small mono-propellant hydrazine reciprocating engine driving a large pusher propellor. Since the vehicle will fly at low speeds, it will be capable of precise maneuvering in aerospace vehicle wakes.

Commenting on his participation in the Mini Sniffer Project, Bob said, "I feel most fortunate to have the opportunity to utilize my hobby in a meaningful research project such as this."

DESIGNER Bob Vaughn holds model airplane he built. Flanking Bob are his 'ground support' crew members, Dale Reed, project manager, left, and Dan Garrabrant, visual pilot, both of NASA. Photo by Sam Orr.

Credit Union Elects New Officers

Shareholders attending the Feb. 5 annual meeting of the Northrop Credit Union, Hawthorne, heard officers and directors report a successful year of operation during 1973 in which total gross assets reached an all-time high of $14 million. Results were the increased dividend from 6½ per cent to 6¾ per cent during the last half of the year.

Elected as directors for the coming year were Harvey Cook, L. L. Cripe, M. B. Delaney, R. D. Hampton, J. J. Richardson, Aircraft Division; R. A. Lindsey, Electronics Palos Verdes; B. M. Slotnick, Northrop Data Processing; W. H. Waysman, Corporate office; and R. M. Shave, Electro-Mechanical Division.

Supervisory Committee members elected were E. R. Foord and H. H. Sweet, Aircraft; T. A. Hruska, Northrop Data Processing; A. W. Johnson, Electro-Mechanical; and S. D. Parr, Electronics Palos Verdes.

Credit Committee members are Margaret Faubion and R. C. Pontious, Aircraft and W. H. Justice, Jr., Northrop Data Processing. Alternates appointed were R. L. Greetan, B. E. Hoffman, G. F. Kasson, M. G. Peiffer, E. J. Regalado, E. W. Ross, Jr. and M. M. Tully, Aircraft, with M. M. Griffin as an alternate in North Carolina.

Subordinate officers are M. G. Peiffer and E. M. Pillar, assistant treasurers; W. F. Robinson, cashier; H. M. Walker, membership chairman; M. G. Peiffer, N. I. Thomas and Margaret Faubion as loan officers.

Most Petite Graduate Is Now Deputy Sheriff Greif

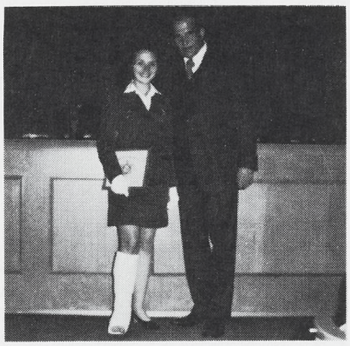
Dawn Leslie Greif, 23-year old daughter of Stan J. Greif, director of Forward Planning, Electronics Division, graduated from the Los Angeles County Sheriff's Academy in January.

Deputy Sheriff Greif completed the 26-week course as the smallest graduate (a petite five foot three inches worth) to go through the rigorous program which saw approximately 60 of 120 entrants actually complete the course.

Stan described the program as being "like going through a plebe year." And he should know — he is a graduate of the United States Naval Academy.

Among the tasks encountered in her training, Dawn had to run two to six miles a day; take self-defense courses; learn pursuit driving tactics; and qualify with small arms which she did with flying colors, qualifying as an expert marksman with a .38 caliber revolver.

Dawn, who is a graduate of UCLA with a bachelor of arts degree in political science, has been assigned to the Sybil Brand Institute for Women in Los Angeles.



DAWN GREIF poses with Sheriff Peter Pitchess during commencement exercises at the Sheriff's Academy. The cast on her ankle is from an injury sustained during training.

ON SMOKING

I smoke — at home, in the office, in private, and in public. I've tried to quit, but the habit is just too strong.

When I'm around others, I'll usually ask "mind if I smoke" — but there are times when I forget and light up simply out of habit.

When I do ask, you usually say "not at all," and suffer in silence. But you would be helping each of us if you would say yes, you do mind. It would call my attention to a habit I truly would like to break, and it would help clear the air for all the non-smokers whose lungs and eyes are irritated due to my lack of will power.

Next time I light up, object! Your asking me not to smoke may be just the added push I need to shake the habit.

Speak up.

DISNEYLAND FAMILY NIGHT

Keep the date of Saturday, May 18 open for an evening of family fun because that will be the night of the NRC's annual Northrop Family Night at Disneyland. Unlimited use of all attractions (except shooting galleries) and top entertainment are only part of the special ticket price of $4.75. Tickets go on sale Apr. 1. Employees are urged to share the ride with fellow employees for this magic evening which will run from 8:30 p.m. to 1:30 a.m.

Anaheim to Host Basketball Tourney

The second annual All-Northrop Basketball Tournament featuring stars from the recreation clubs of the Aircraft, Electro-Mechanical, Ventura, and Electronics Divisions will be held Apr. 3 and 5, at Western High School in Anaheim.

In the first round, the defending champion Aircraft team will face the Electronics squad and the Electro-Mechanical Division draws the Ventura Division. Game times will be 7:30 and 9 p.m. On Friday, the losers of game one will play for third place and in the finale, the winners of the first round will meet for the perpetual trophy.

The tournament is being hosted by the NRC of the Electro-Mechanical Division and, according to Duane Baptiste, Industrial Relations representative, "It should really be a good tournament this year. Aircraft is strong again this year, but the others have improved steadily from last time around and will give them a run for their money."

The tournament is free to all employees and their friends so share the ride out and support your team.

The Western High School gymnasium is located at Orange and Western avenues in Anaheim and may be reached by heading east on Interstate 91 to Knott Avenue south, and then left on Orange to the school.

Comment . . .

The Northrop News will publish in each issue a selection of letters which, in the sole judgment of the editors, are of the broadest general interest. Remember that the best sources for information about Northrop practices are your "Working With Northrop" booklet or your immediate supervisor. Letters should be addressed to "Comment, Northrop News, 172/AJ."

* * *

"As part of my job assignment at the Aircraft Division, I sometimes walk from Plant One to the Engineering Science Center, to Plant Three and return.

"I am passed by the company-owned three-wheeled vehicles going the same way, almost invariably with one person in them.

"At times I could use a lift, but am seldom offered a ride by one of these solo riders. When using my own vehicles to get from one place to another, I am mindful of the pedestrian and offer them a ride.

"Could something be done as a matter of courtesy and policy, to have these vehicle operators help their fellow employees out?" — Jim Dickey, Aircraft Division.

"There is no rule or regulation preventing company-owned three-wheeled vehicles traveling within the plant from carrying passengers. We would suggest that anyone walking in the plant that wants a ride, hold up their hand or give some indication to the driver that they want a ride.

"In the very near future we will resume shuttle bus service. This will ease the situation for people having to travel from one place to another as part of their job assignments." — Lyle L. Cripe, Industrial Relations, Aircraft Division.

Children Not Troublesome, Says Electro-Mechanical Couple

The champion parents of Electro-Mechanical Division must surely be M. L. Hawkins and his wife, Charlotte. They have had 44 girls in the past 15 years.

"At least about that many," Mr. Hawkins said. "I've lost count."

The girls, whose ages run from 13 to 18 years, are foster children. "But for all of that they were ours during the years they were with us," he said. "We have six with us now. The others have grown up and gone their own ways."

The Hawkins' joined the Foster Parents program 15 years ago for two main reasons. "For one thing," he said, "we've all got to help each other. And for another, we have this ranch near Mira Loma.

"I raise my own chickens, pigs and cows. We have a swimming pool and plenty of room. It's a perfect place for children to grow up and it is a shame to let it go to waste."

The reason they picked girls instead of boys was Mrs. Hawkins' idea. "She does 90 per cent of the work," Mr. Hawkins said. "So she gets her way."

It would appear that so many girls might be troublesome, but Mr. Hawkins denies it. "Children are never troublesome," he said. "Nor do they get in trouble if their parents will just take the time to listen to them once in a while."

THE HAWKINS FAMILY

ICE CAPADES TICKET SALE

Personnel Activities, Aircraft Division, has tickets for the Ice Capades on sale at the price of $5 for adults and youth, 16 and under, $3. The day will be Saturday, May 4. The place is the Los Angeles Sports Arena. Reserved seating is available at group discount prices.

Starting with the April edition, the classified ad deadline will be changed from the second Wednesday of each month to the second Monday of each month.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Wednesday of each month.

Vehicles For Sale

Datsun, 1971 510 sta. wagon, a/c, $2000. 213-371-5155.

Motorhome, 1972 Pride-N-Joy, on Dodge chassis self-contained, sleeps 6, auto. trans., p/s, p/b, a/c 17,500 mi., $7895. 213-679-0710.

Pickup, 1969 Chev. C-10, new hvy. duty clutch & brakes, $1050. 213-274-0589.

Motorcycle, 1971 Suzuki, 50 cc, $200. 213-348-9928.

Olds, 1972 Cutlass Supreme, a/c, p/s, p/b, AM-FM, $3295. 213-994-6916.

Motorcycle, 1972 Yamaha Mini Enduro, street legal, 3000 mi., $200. 213-377-9723.

Porsche, 1969 Targa 911E sport, many extras, $6000. 213-864-0833.

Triumph 650, 1971, fully customized, $1395. 213-542-2353.

Pontiac, 1966 LeMans cpe., fully equipped, $595. 213-675-6397.

Motorcycle, 1973 Yamaha 125MX, new knobbies, $425. 213-679-7746.

Motorcycle, 1972 750cc Norton Commando Combat, 5000 mi., $1295. 213-532-7645.

Pontiac, 1968 Catalina, $650. 213-325-7076.

Chevrolet, 1968 Impala 2-dr. 307 V-8, auto. trans., p/s, radio, 56,000 mi., $550. 213-673-4890.

Plymouth, 1970 Barracuda, all power, $950. 213-376-6668.

Dodge, 1972 Charger, a/c, p/s, p/b, auto. or shift trans., $2700. 213-671-2013.

Pontiac, 1972 Firebird Esprit, fully equipped, $3100. 213-879-4844.

Pontiac, 1969 Ventura, 2-dr., new tires & brks., $1800. 213-679-3728.

All Terrain Vehicle, 1971 Honda ATC 90, 3-wheeled, complete w/2 helmets & spare parts, $295. 213-378-3920.

Motorcycle, 1973 Honda CB450K6, 2500 mi., under warranty, $875. 714-995-1866.

Oldsmobile, 1968 Cutlass 442, air, p/b, p/s, a/t, stereo, $1095. 213-377-5450.

Mustang, 1965, auto. console shift, a/c, p/s, V-8 2-bbl., reblt. eng., $725. 213-679-2026.

Motorcycle, 1970 Honda, complete, $145. 714-635-2539.

Lincoln, 1950, 58,000 mi., $500. 213-372-0237.

Miscellaneous For Sale

Dishwasher, Lady Kenmore, auto., portable, coppertone, $50. 213-542-2390.

Stereo, in 7' Barzilay cabinet, AM/FM tuner, spkrs., changer, $250. 213-541-1202.

Carpet, 130 yds., champagne color, 15x36, 18x30, 8x12, $275. 213-326-7745.

Typewriter, Remington noiseless portable, $20. 213-753-7484.

Walker, very sturdy, $15. 213-671-6069.

Stereo, floor model radio-phono, $50. 213-835-3869.

Bunk Beds, 2-twin, & mattress, $50. 213-644-8075.

Orbit Radio, Reed's, complete, use for airplane or boats, $25. 213-371-6758.

Travel Trailer, 1972 RedDale, 21', tandem-axle, fully self-contained, sleeps 6, awning, $2600. 213-545-7466.

Cabin Cruiser, 1969 Luhrs, 28', full head & galley, flying bridge, depth finder, 300 Chrysler eng. $8500. 213-372-8669.

Climber, child's, w/swing, $5. 213-675-8813.

Bicycle, girl's 20", w/metal basket, $17. 213-322-6655.

Exhibition Chess Set, never used, $100. 805-259-6570.

Refrigerator, 2-dr., frost free, bottom freezer, l.h. door, coppertone, recond. $100. 213-424-8843.

Pool Table, 8', $40. 213-675-3910.

Miscellaneous For Sale

Silverware, Wallace sterling, Rosepoint pattern, never used, 6-pc. place setting, meat fork, $100. 213-641-3333.

Sewing Machine, antique Singer, treadle-type w/cab., $50. 213-679-3288.

Luggage Rack, lg. hvy. duty, will fit w/out adjustment '64-65 Pontiac or Buick sta. wagon, $15. 714-892-6507.

Piano, Wurlitzer modern walnut spinet, $450. 213-675-3889.

Tape Recorder, Panasonic, reel to reel, $50. 213-823-7134.

Sofa, 8' & chair, brown vinyl w/blue floral slipcovers, $50. 213-675-6449.

Refrigerator, Admiral 11 cu. ft., 2-dr. top freezer, coppertone, $50. 714-870-7530.

I Beam, 5" x 1' x 24', $60. 213-376-7023, 213-376-9600.

Washer, Westinghouse, & 220 V. dryer, used 1 yr., $280. 213-591-0457.

Pups, Irish setter, AKC, avail. after Apr. 15, from $125. 213-679-5294.

Bicycle, Schwinn Super Sport, $80. 213-346-6255.

Toy Chest, wooden, 18 x 18 x 36, $5. 213-376-4831.

Couch, Herculeon, walnut, $120. 213-530-7939.

Mobile Home, 10 x 50, 10 x 15 screen rm., redwood util. shed, landscaped, covered carport, $4200. 213-675-7547.

Desert Air Lamp, McCalls, $30. 213-324-7059.

Lawnmower, King "O" Lawn, 18" & catcher, $60. 213-675-5258.

Bicycle, Schwinn, 5-spd. Stingray, $95. 213-375-5360.

Lawn Spreader, Scott's, $15. 714-968-7987.

Records, Jazz, 1937 & on, $1 ea. or $75. 213-633-2990.

Dinette Set, fruitwood, 4 chairs, table w/leaf, $50. 213-672-1090.

Pinball Machine, electronic, 4 flippers, $295. 213-676-3050.

Bed, dble, roll-away, used 3 times, $50. 213-545-4403.

Skis, Fischer ALU, 200 cm, Nevada heel & toe, $50. 213-821-3691.

Cassette Library, prerecorded stereo, Crosby, Stills, Nash, Young & others, $250. 805-482-6125.

TV, 9" portable blk. & white, 2 yrs. old, $25. 213-973-8897.

Bowling Ball, used, 15 lb. $5. 213-323-6840.

Refrigerator-Freezer, 15 cu. ft. Kelvinator, white, 2 drs., $60. 805-498-2787.

Refrigerator-Freezer, 21 cu. ft., dble. dr., ice cube maker, yellow, Coldspot, $200. 213-377-3858.

Swimming Pool, Sears, 15' circular x 4' dp., tubular frame, siding ladder, walk way, $25. 213-374-8548.

Draperies, pale green, fully lined, 84" x 102", $25. 213-373-8163.

Bicycle, tandem w/extra folding seat & lights, $65. 213-832-1684.

Penny Collection, complete Lincoln head, $250. 213-671-1679.

Bicycle, girl's 20" Sting Ray, $35. 213-323-3202 after 5 p.m.

Bottles, entire Avon collection, $2000. 213-679-2656.

Recliner Chair, $10. 213-326-6200.

Encyclopedia, 30 vols. Britannica, 3, 1974 ed., $348. 213-248-9654.

Pups, Irish setter, AKC w/papers, $50. 213-329-6264.

Stove, avocado green, 1971 Delux Sears Mod., clock, timer, lge. oven w/glass window & griddle, $125. 213-370-8229

Wanted To Buy

Hospital Bed, adjustable. 213-679-6982.

Engine, for 250cc Honda, running or not. 213-371-9758.

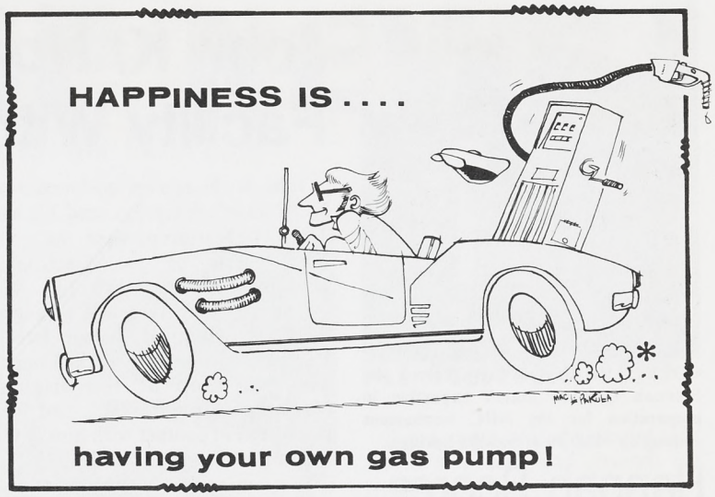
Skis, 180 cm, & boots, ladies size 8. 213-323-9586.

Movie Camera, 8mm Bolex, P1, P2 or P3 configuration, must have CDS light meter or equivalent built into camera. 213-376-8502.

Tent, outside frame preferred but will take center pole. 213-676-1254.

For Sale or Trade

Boat, 16', w/45 hp. motor, trade for 8' cabover camper. 213-644-2009.



Northrop Streaking Club Guidelines Set

In answer to the number of requests to form a Northrop Streaking Club, Marie Tully, manager, Aircraft Division Personnel Activities, has checked with groups involved and has the following to offer as guidelines:

• Safety — Hard hats, safety glasses and safety shoes must be worn at all times.

• Security — Identification badges must be displayed between the left shoulder and hip.

• Personnel — The organization will be open to all employees.

• Medical — Managers over 50 will terminate their streak at the medical facility for medical check (this will save the wear and tear on the treadmill, and results can be recorded for annual physical requirements).

• Traffic — All traffic signs must be obeyed. Fully clothed personnel in crosswalks will be given right of way at all times.

• Energy Task Office — No additional lighting will be permitted. Heating and air conditioning will remain at 68°. If streaking is on a regular schedule, mail distribution routes can be established for quick delivery (that's M-A-I-L, not M-A-L-E).

• NRC Commissioners — Commissioners and representatives for the various Northrop operations will be elected as soon as the club rules are approved.

Rentals Wanted

Open Road, 1973, 24', sleep 4, auxiliary generator & air cond., by day, week or month. 213-329-2363.

Lost and Found

Pup, white, floppy-earred male, about 14" tall, Kamala wandered away Mar. 3 vicinity of 134th Pl. & Doty Ave., Haw., reward. 213-675-1207.

Personals

I wish to thank all my friends at Northrop for my retirement party & the gift. MR. & MRS. JERRY HOUSER.

My love & heartfelt thanks to all my friends who made my retirement dinner so fantastic, wonderful & memorable. IRENE GORDY.

I wish to express my deep gratitude & sincere appreciation to each & every one for the gifts & many well wishes extended me at my recent retirement party. FLORENCE MONTGOMERY.

Many thanks for the flowers, cards & good wishes. RON & JEANNE KLEIN.

Riders Wanted, 7 a.m. to 3:42 p.m., Huntington Beach, Aircraft ext. 2905, 714-531-8845.

Share Ride, vicinity of Beverly Glen & Olympic Blvd., W. L.A. to Hawthorne, 7:30 a.m.-4:12 p.m. Aircraft ext. 2710, 213-277-5129.

Rider Wanted, from Laguna, El Tora area to Aircraft Div., 7 a.m. to 3:42 p.m. Aircraft ext. 1729, 714-586-2344.

Ride Wanted or car pool, vic. of Venice & San Diego Fwy., 7 a.m. - 3:45 p.m., will adjust hours, Electronics Hawthorne ext. 431, 213-839-3473.

Ride wanted, or car pool, Redondo Ave. & 4th, Long Beach, 7:30 a.m. - 4:12 p.m., except Tues., Aircraft ext. 1956, 213-438-2140.

Car Pool, from Orange & Riverside fwys. to Hawthorne, 8 a.m.-5 p.m., Aircraft ext. 4481, 714-524-6946.

Want to form car pool, 190th & Inglewood Ave., 190th & Hawthorne Blvd., 8 a.m.-4:42 p.m., Aircraft ext. 4751, 213-371-2664.

Ride wanted & share, vicinity Brookhurst & Orangethorpe, Fullerton, to Mariposa, 7:24 a.m.-4:06 p.m., Aircraft ext. 6559, 714-871-0880.

Wish to form car pool, 4-5 people from vic. of Brookhurst/Warner (Gemco), Fountain Valley to Aircraft Div., 7:30 a.m.-4:12p.m., Aircraft ext. 4477, 714-968-4800.

I would like to take this opportunity to acknowledge all of the best wishes & good fortune that has been passed my way since I let it be known of my intention for retirement; & to thank all the friends that prepared the cakes & contributed to the C.B. radio. H. A. BUTLER.

RETIREE CLUB

The Northrop Retiree Club will hold its annual dinner Wednesday, May 15 at the Western Avenue Country Club. Cost is $3.75.

Contact Michael Orth, 213-676-8331 or Dave Cocks, Aircraft Division ext. 4441.

NORTHROP NEWS

Vol. 32 **No. 3**

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Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Peter Goodall, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher. Correspondent, Northrop Hueneme, and editor, Spanish language edition: Joe Anguiano.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

GOLF CLUB Captain Steve Vavrek and Hannah Quinlan match expertise in preparation for the NRC tournament coming up Mar. 30 at Soboba Springs.

Hannah Scores Golfing 'First'

Hannah Quinlan, secretary, Palos Verdes, became the first woman to win closest to the pin honors in an NRC tournament at the recent match at Huntington Sea Cliff Golf Course Feb. 23.

Using her lucky three wood (which brought her a hole-in-one in 1969) Hannah hit a drive 141 yards on the eighth hole, landing just six feet from the flag. "Somehow I missed the putt though," Hannah added meekly. She ended with 100 for a net 75 in the tournament. Hannah and Bobbi Reynolds, also of Palos Verdes, joined the men's league last year and have been "holding their own" with the guys.

John K. Northrop Tours Hawthorne Facility With Son, Receives Tribute

John K. Northrop, co-founder of Northrop Corporation, and his son John H. Northrop, were the honored guests of the Electronics Division Wednesday, Feb. 27.

The day long visit was arranged by Oscar Gumpert, senior buyer, Purchasing, who had worked under Mr. Northrop at the original Northrop Aircraft, Inc., and has since been in contact with him at his Santa Barbara residence.

Welcoming the Northrops to the division was A. B. Lipscomb, vice president and manager, Avionics Department, who noted, "Every person that wears your name on their badge is proud of you and the company you helped form. The name Northrop instills pride in each of us in our everyday duties, and we are very grateful to you and for what you have done."

Kirk Hunt, senior engineer, Environmental Test Unit, gave a brief history of the Jack Northrop years and then presented him with a large plaque commemorating the first 10 years of Northrop Aircraft, Inc., depicted in clippings from the 10th anniversary issue of the Northrop News. The plaque, which was prepared by Oscar Gumpert, had a tribute to Mr. Northrop on the back and the signatures of more than 150 employees within the division who had worked under him.

Presentation

Frank McGinley, Electronics NRC president, presented Mr. Northrop with silver and bronze medallions struck by the Coin Club in observance of its silver anniversary in 1972. Three Northrop programs are depicted on the medallions including the Flying Wing, Reentry Parachutes from Ventura Division, and the Lightweight Fighter.

EXPLAINING AN assembly procedure to Mr. Northrop is Connie Knoblauch, electronic assembler, Hawthorne.

On Tour

Touring the Hawthorne Facility, Mr. Northrop was shown various hardware displays and work sections within the Navigation and Avionics Departments by Donald Chaney, program manager, who began the tour with a slide presentation on Electronics Division programs and progress through the years.

As they visited assembly lines and laboratories throughout the facility, Mr. Northrop shook hands and introduced himself, later expressing his regrets at not having enough time to meet each person individually. He especially enjoyed renewing acquaintances with those who had worked with him before.

Mr. Northrop voiced amazement at the advanced technology acquired in recent years in the field of electronic navigation systems and componentry and offered high praise for the miniaturization and micropackaging techniques adopted by the Electronics Division.

Upon completion of his visit, Mr. Northrop thanked his hosts and asked that they convey his gratitude to all for the mementos given him and the warm welcome accorded himself and his son.

"I am very proud of the company and its achievements and from what I have seen today, Northrop has a very long and prosperous future ahead," Mr. Northrop said.

MICRO-PACKAGING techniques developed by the Microelectronics Laboratory, Hawthorne, were explained by Jim Cramer, engineering specialist, left, and Betty Tung, senior engineer, to Mr. Northrop and his son John H. Northrop during their visit.

Eight Observe Anniversaries

Eight division employees are observing service anniversaries during March and they are:

20 Years — Laura Martinez, Palos Verdes; James McClanahan, Jean Schaefer, and Charlotte Morris, Hawthorne.

15 Years — Eva McLeskey and John Pastizzo, Hawthorne.

5 Years — Edward Zeman, Hawthorne; Yang Wong, BSL (Hayward).

Suggestion Brings $312 Award to E.H. Steinmeyer

Six division employees found out what a good idea can be worth in the Employee Suggestion Award Program as they received checks for over $490 for approved suggestions in February.

Heading the list of suggestors was E. H. 'Steinie' Steinmeyer, senior artist, Publications and Proposals, who was awarded a check for $312. Steinie's suggestion outlined a simplified, cost reducing approach in the production of color slides used in briefings and proposals.

E. H. STEINMEYER, center, receives suggestion award certificate for $312 from R. C. Keller, director of Security, Safety and Publications. Looking on is D. F. Mealy, general supervisor, Graphics Reports and Reproduction.

By eliminating half of the steps normally required to produce a slide, the suggestion resulted in a reduction of man-hours and marked reduction in materials required.

Also receiving cash awards were Joyce Elliott, $73, for Computer Reprogram for DWG Space Implementation; Andrew Demetry, $46 for Holding Fixture for Assembly Cards; Anthony Blackwood, $40 for Component Terminology and Effect Criteria Manual; and Doyle Hatfield and Anne Daley, $25 shared for Transformer Lead Trim Aid.

Increased benefits are available to participants in the Employee Suggestion Award Program with the raising of the minimum award for a suggestion from $10 to $25 effective Mar. 1, according to Hal Janssen, manager, Division Relations and Services Department.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California Vol. 32, No. 4 April 1974

BSL System Leased to Georgia Firm

The Medical Data Systems Division of Berkeley Scientific Laboratories, Inc., a subsidiary of Northrop, has announced the leasing of a CLINDATA 200 system to Interstate Pathology and Reference Laboratories of Columbus, Ga.

The CLINDATA 200, a clinical laboratory data processing system, will fully automate Interstate's laboratory operations. Specimens will be processed by computer from the initial test request through on-line result acquisition to the automatic report print-out.

Kenneth Lame, director of Marketing for BSL, noted, "Service to Interstate's client physicians will be substantially improved due to the reduction in turn-around time and the greater clarity and quality of reports made possible by the CLINDATA 200."

The system is scheduled for delivery this spring.

RIVER OUTING

Members of the Northrop Ski Club have already put away their snow skis and are preparing for summer activities. First item for the season will be a campout/water ski outing to the Colorado River Memorial Day weekend May 24-27. For signup information contact John Rufino, ext. 541, Palos Verdes, or Rick Crane, ext. 6417, Mariposa.

CROWD VIEWS YF-17 AFTER CEREMONY

Working with Management, Committee Faces Issue

The division facilities at Hawthorne and Palos Verdes have Minority/Women Advisory Committee operating charters established by the General Manager David N. Ferguson.

The charters provide for the collection, exchange, discussion, and dissemination of information involving minority and women group relationships and employment opportunities for minorities and women. The committee provides advice, counsel, and formal recommendations to the Management Equal Opportunity Committee on program policies and practices.

George Harris, Affirmative Action Program administrator, states the committee strives to have its membership represent a good cross section of minority and women personnel throughout the division, and urges employees who are interested in the committee process to contact a committee member or Employee Relations for further information. Mr. Harris serves as advisor and consultant to the committee as Industrial Relations representative.

"The current Hawthorne committee has continually reflected a concerned attitude toward potential problem areas and general employment opportunities," he said.

The committee, which meets once a month, invites a different member of management to sit in and participate in the discussions.

Mr. Harris also noted that management encourages the participation of women and minority

(See COMMITTEE, page 8)

MEMBERS OF the Minority and Women Advisory Committee are, front row, left to right, Rita Ramirez, Pam Roehrig, Lee Benton, and Eva Deschene. Back row, Jesse Ingram, Fred White, Otha Stubblefield, Ellsworth Waits, Peter Casey, and Roberto Gonzales.

Management Club To Hear Ferguson

David N. Ferguson, Corporate vice president and general manager, will address the Apr. 17 meeting of the Management Club to be held at Lococo's in Manhattan Beach. Social hour will begin at 5:30 p.m. followed by dinner at 6:30 p.m.

Mr. Ferguson will present a "state of the division" address to the club with emphasis on the future of current projects as well as answer questions.

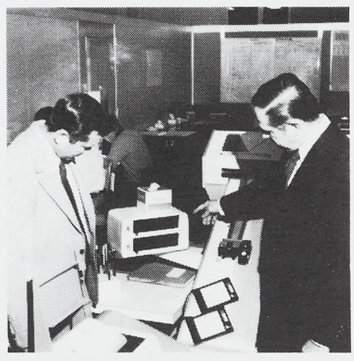
First YF-17 Is Unveiled At Hawthorne

Amid prominent dignitaries, the nation's press, and friends of Northrop, the YF-17 officially joined the Northrop family of fighters in presentation ceremonies at Hawthorne Apr. 4.

An international throng watched as President Thomas V. Jones and the Honorable John L. McLucas, secretary of the Air Force, delivered the keynote addresses prior to the unveiling of the YF-17 against a backdrop of four other high performance low-cost Northrop aircraft — T-38 Talon, F-5A tactical fighter, F-5B fighter-trainer, and the F-5E Tiger II.

The YF-17 has as part of its sophisticated, advanced technology hardware a weapons delivery system that includes a gunsight head up display in which the Electronics Division participated in the design and manufacture. The division supplied the TOP/20 (Task Oriented Processor/20) general purpose, lightweight, low-power, airborne digital computer for the system developed at Hawthorne. Electronics also manufactures electronic assemblies used in the weapons delivery system.

The YF-17 technology demonstration aircraft will make its maiden flight at Edwards AFB this spring.



ED ROSS, right, supervisor, Precision Graphics unit, explains function of X-Y readout to Bill Lewis, director of the So. Calif. Regional Center, which trains and places veterans, handicapped, and minorities in occupations in the community. The division donated materials to the center for use in training personnel in the preparation of a printed circuit board.

Realignment of Subsidiary Product Lines Announced

Northrop announced that it will integrate the product lines of the Communications Equipment Division of The Hallicrafters Company, a wholly owned subsidiary, into those of Wilcox Electric, Inc., a subsidiary headquartered in Kansas City, Mo.

In making the announcement, Ross F. Miller, Northrop group vice president, Communications and Electronics, said, "The realignment will strengthen the engineering, manufacturing and worldwide marketing activities of both organizations, and provide Hallicrafters and Wilcox customers with expanded services and availability of specialized communications equipment."

Mr. Miller added that there will be no change in the Hallicrafters Defense Systems Division in Rolling Meadows, Ill., which reports to the Electronics Division, Palos Verdes.

Hallicrafters equipment and distributor system will continue under the trade name known throughout the world.

Mr. Miller said the integration will begin immediately on a phasing basis and will be completed by mid-year 1974. Key executives of Hallicrafters involved in the realignment include Benjamin D. Drezner, vice president, Marketing and International Marketing; Robert J. Orwin, manager of Engineering; and Richard M. Shappee, manager of the Communications Equipment Division manufacturing plant in El Paso.

The Communications Equipment Division of Hallicrafters is engaged in the design, development and manufacture of two-way radio communication products and systems. Its equipment and systems are designed for government, public safety, commercial, para-military and military markets. Hallicrafters has successfully introduced both short and long range communications equipment in over 60 countries throughout the world.

Wilcox Electric, Inc., is engaged in the design, development and manufacture of aircraft instrument landing systems, distance measuring equipment and airborne navigational aids, for both military and commercial use, together with certain telephonic equipment and military ground-to-ground and ground-to-air portable equipment.

Envirodyne, Inc. Acquires Olson

Envirodyne, Inc. of Los Angeles, has signed an agreement to acquire the interest of Northrop in Olson Laboratories, Inc., it was announced by Dr. Ronald K. Linde, chairman and president of Envirodyne, and Frank W. Lynch, vice president and general manager, Electro-Mechanical Division.

The agreement, which is subject to regulatory approval, provides for Envirodyne to acquire Northrop's 84 per cent holdings in Olson in exchange for Envirodyne common stock with a current market value of approximately $550,000. Additional shares may be issued to Northrop depending primarily upon Olson earnings in the next five years.

Management

R. L. Gibney, president of Olson, will continue to head the operation, Dr. Linde indicated. Other Olson management also will continue in their present positions.

Olson, an environmental science company, had 1973 sales of $2.5 million and is operating profitably on increasing volume. Its primary areas of activity are in the testing of vehicles for fuel consumption, emissions control and safety devices; the performance of environmental research and engineering and the conduct of environmental impact studies. Programs are carried out for a variety of federal, state and local government agencies; private industry, and other organizations such as the American Petroleum Institute. The seven year old firm is headquartered in Anaheim, and has operations in Livonia, Mich.; Atlanta; Philadelphia and New York City.

Envirodyne is a broadly based company offering environmental and energy-related products and services.

CAPTAINS Donald Woodcock, Harold Hollenshead and Lavon Vannier, Air Force officers assigned to the Education With Industry Program, discuss one of Precision Products Department's early guidance platforms with Joe Yamron, second left, vice president and manager, during their visit to that facility.

Slate Set for Metric Seminar And Exhibits April 26 and 27

A metric seminar and exhibit anticipated to be one of the largest ever held in the U.S. is scheduled for the weekend of Apr. 26-27, at the Sheraton-Anaheim Motor Hotel under the joint sponsorship of the Society of Manufacturing Engineers (SME), the Standards Engineers Society, and other interested groups.

Al Siggson, senior engineer, Aircraft Division, is the seminar chairman, and other Northrop personnel participating in the seminar include Frank W. Lynch, Corporate vice president and general manager, Electro-Mechanical Division.

The seminar will feature metric exhibits, a five-man panel of metric experts, and 12 speakers presenting papers covering engineering, production, quality control, purchasing, and marketing aspects of metrication. A special added attraction will be Miss Metrication, Terry Lynn Harmon, who is also Miss Orange County.

Other Northrop personnel contributing to the planning of the seminar are: Mary Polk, standards analyst, Electro-Mechanical Division, a full member of SES; Paul Eckroth, Bob Schmidt, Pete Cooper, Al Henschel, Gene Compton and Bob Harr, Aircraft Division Engineering, members of SME.

The sponsors of the seminar will present awards to those persons who have contributed to the promotion and implementation of the SI Metric System.

For reservations and information for the seminar call Al Siggson, ext. 1815 or Paul Eckroth, ext. 1465, Aircraft; or Mary Polk, ext. 553, Electro-Mechanical.

FRANK W. LYNCH, vice president and general manager, Electro-Mechanical Division, signs a CROTALE air defense missile teaming agreement with John Salathe, Jr., general manager of PACCAR's Pacific Car and Foundry Division, and J. F. Reagan, president of Rockwell International's Missile Systems Division. Rockwell International will produce the French designed CROTALE air defense system in the United States if it is selected for the Short Range Air Defense (SHORAD) mission by the U.S. Army. Electro-Mechanical Division will have subcontractor responsibility for the turret/launcher on the CROTALE firing unit and the turret/antenna on the acquisition unit.

Director of Public Affairs Appointed

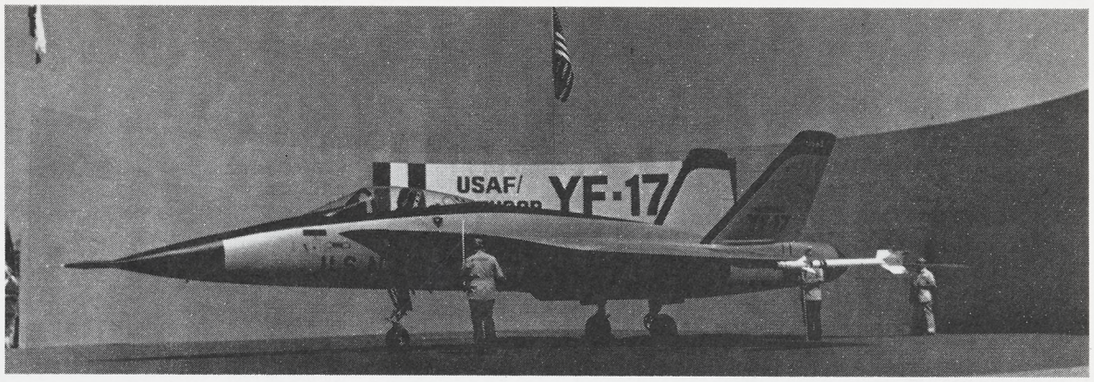
James K. Corfield has been appointed Corporate director of Public Affairs for Europe, the Middle East and Africa, it has been announced.

Mr. Corfield joins Northrop from the Hawker Siddeley Group, in London, where he has been the group's senior public relations officer. He will be based at the corporation's new London office and will report directly to corporate headquarters. In his new position, Mr. Corfield succeeds Les Daly who, after several years in that post, returned to the United States in 1973 to become the company's vice president for public affairs.

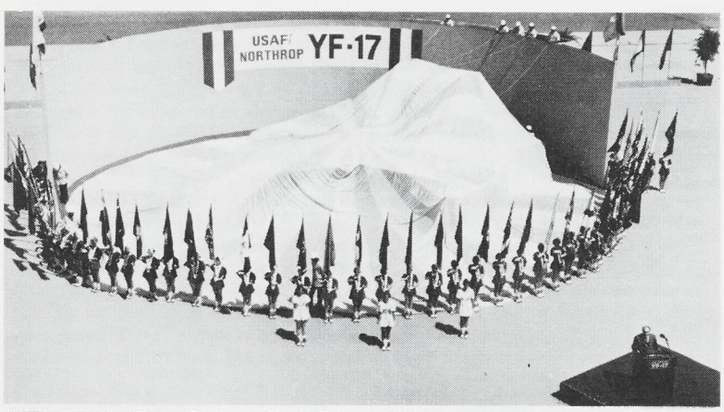
Mr. Corfield is a former newspaperman, and served in the Royal Navy's Fleet Air Arm in World War II before entering industry.

Northrop's London office is at Ventura House, 72/74 Station Road, Hayes, Middlesex.

LT. GENERAL James T. Stewart, USAF, commander, Aeronautical Systems Division, with President Thomas V. Jones.



YF-17 Presentation Ceremonies

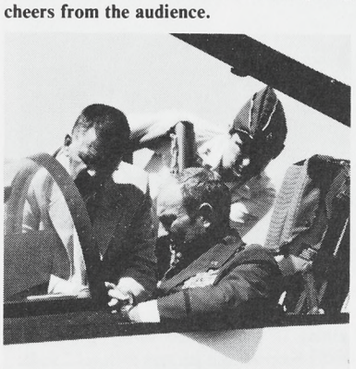


MEMBERS OF the Burbank High School drill team surround the shrouded YF-17. George Gore, vice president and general counsel, speaks from the podium.

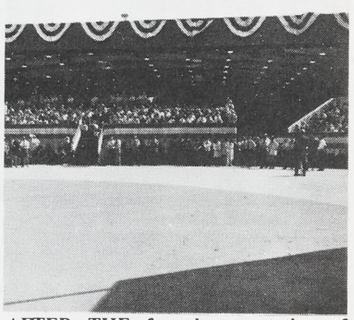
UNVEILING OF the world's newest jet fighter was a spectacular sight and brought loud cheers from the audience.

VISITORS and employees gather around the YF-17 prototype to take a closer look at the new jet fighter which will make its maiden flight at Edwards AFB.

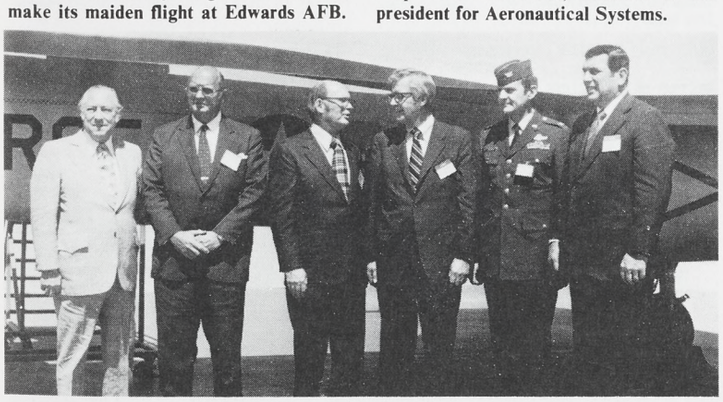
JACQUELINE Cochran, famed aviatrix, tries out cockpit for size while talking shop with Bob Elder, assistant to the president for Aeronautical Systems.



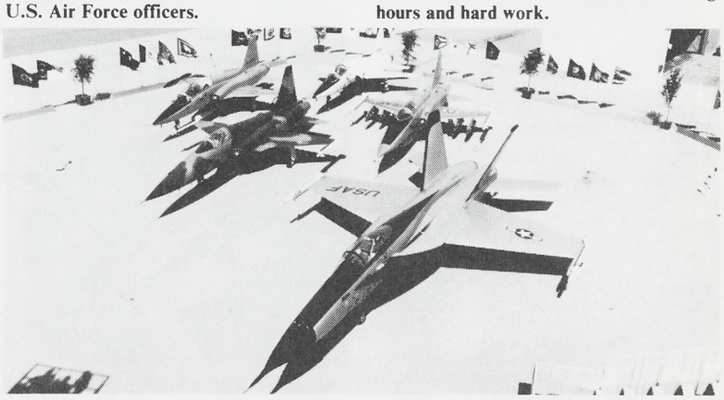
HANK CHOUTEAU, left, Northrop's chief test pilot who will pilot the first YF-17 flight, discusses cockpit features with U.S. Air Force officers.



AFTER THE formal presentation of the YF-17, Northrop employees were invited to see the result of their long hours and hard work.



HONORABLE Charles H. Wilson, Congressman, 31st District-Calif.; Jack S. Parker, vice chairman of the board, General Electric; Honorable John L. McLucas, secretary of the Air Force; Roy P. Jackson, vice president and F-17 Program manager; Colonel William E. Thurman, deputy for Prototypes, Aeronautical Systems Division, Wright-Patterson AFB; and Welko E. Gasich, vice president and general manager, Aircraft Division; pose for photograph after ceremonies.



WORLD'S newest jet fighter makes its debut against a backdrop of four other Northrop aircraft — T-38 Talon, F-5A tactical fighter, F-5B fighter-trainer and the F-5E International Fighter. The YF-17 will be able to outmaneuver any operational aircraft known. This is the first of two prototypes with technology features such as graphite composites, tilted cockpit seat and a bubble canopy for unrestricted pilot vision. It will be powered by two General Electric YJ101 turbojet engines.

Northrop Employees' Savings Plans Annual Report for 1973

The twelfth Annual Report on the financial condition of Northrop Employees' Savings Plans is presented below.

The report shows the condition of the Trust at Dec. 31, 1973, the values for each fund and the securities held in each fund at that date. The report also summarizes the cash transactions for the year ended Dec. 31, 1973 and since the inception of the Salaried Plan on Feb. 1, 1962, and the Hourly Plan on Feb. 1, 1966. Unit values for each fund are shown as of the end of each Plan Year through July 31, 1971, for the five months period ended Dec. 31, 1971, and for the Plan Year ended Dec. 31, 1972. Unit values are shown by quarters for the Plan Year ended Dec. 31, 1973.

Summary of Cash Transactions through Dec. 31, 1973

Cash Received:	Fiscal Year 1973	Since Inception
From Salaried Participants	$ 6,876,820	$ 57,210,144
From Hourly Participants	884,666	8,900,278
Total Participant Contributions	$ 7,761,486	$ 66,110,422
From Northrop (50% Participant Contributions less Forfeitures)	3,387,990	28,410,028
Total Contributions	$11,149,476	$ 94,520,450
From Sale of Bonds	8,132,337	41,682,312
From Sale of Stocks	15,695,489	76,763,144
From Income on Bond Fund Investments	854,606	5,115,051
From Income on Stock Fund Investments	573,457	3,256,104
From Income on Northrop Stock Fund	798,615	4,153,220
From Sale of Temporary Investments in Profit Fund	563,000	2,350,000
Total Cash Received	$37,766,980	$227,840,281
Cash Paid Out:		
For Purchase of Bonds (Including Accrued Interest Paid)	9,282,236	56,192,253
For Purchase of Stocks	19,186,098	103,465,221
For Purchase of Temporary Investments in Profit Fund	563,000	2,525,000
For Purchase of Northrop Stock (219,400 shares for Fiscal Year 1973) (1,215,158 shares since inception)	4,199, 797	31,257,959
To Participants on Withdrawal (in addition to 44,221 shares of Northrop Stock during Fiscal Year 1973 and 324,778 shares since inception)	4,569,732	34,236,929
Total Cash Paid Out	$37,800,863	$227,677,362
Balance	(33,883)	—
Cash on Hand (beginning of period)	196,802	
Cash on Hand (end of period)	$ 162,919	$ 162,919

Summary of Condition of the Trust at Dec. 31, 1973

Cash on Hand:		
For Purchase of Bonds		$ 36,660
For Purchase of Stocks		137,031
For Purchase of Northrop Stock		(10,772)
Total Cash on Hand		$ 162,919
Interest Accrued on Bonds and Temporary Investments		199,335
Dividends Declared but not Received on Stocks		31,440
Market Value of Investments:		
Purchased with Participant Contributions:		
Bonds (Cost $13,440,509)		12,507,069
Stocks (Cost $26,966,566)		29,467,612
Purchased with Northrop Contributions:		
Northrop Stock (Cost $22,287,559)		15,645,353
Total Value of Trust		$ 58,013,728
The Value of the Trust is divided as follows:		
Participants' Savings Accounts:		
Bond Fund	$12,726,292	
Stock Fund	29,652,528	42,378,820
Participants' Profit Account		15,634,908
Total Value of Trust		$ 58,013,728

Investments as of Dec. 31, 1973

Bond Fund

	Face Amount	Cost	Market
Public Utility	$ 2,999,000	$ 2,871,988	$ 2,644,935
Industrial	4,999,500	4,510,645	4,115,995
U. S. Government	1,019,000	1,009,392	1,003,025
Banks & Financial Institutions	1,650,000	1,631,105	1,449,779
Federal Agencies	2,045,000	2,014,125	2,016,662
Foreign	151,000	151,000	128,048
Commercial Paper	838,000	838,000	838,000
Convertible Debentures	400,000	414,254	310,625
Total Investments	$14,101,500	$13,440,509	$12,507,069

Profit Fund

	Shares	Cost	Market
Northrop Corporation	890,380	$22,112,559	$15,470,353
Commercial Paper		175,000	175,000
		$22,287,559	$15,645,353

Stock Fund

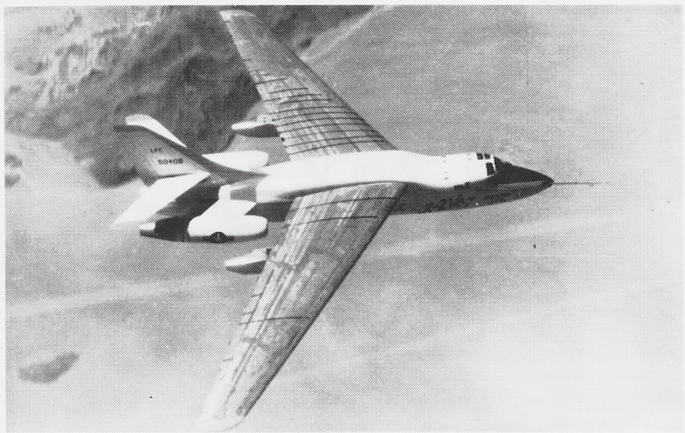
		Shares	Cost	Market
American Express Co.	com	24,000	$ 493,960	$ 1,080,000
American Hospital Supply Corp.	com	10,000	219,155	391,250
Automatic Data Processing	com	8,000	468,000	434,000
Avon Products	cap	13,000	1,099,294	828,750
Baxter Laboratories	com	12,000	638,663	577,500
Capital Holding Corp.	com	20,000	591,067	615,000
Citizens & Southern Natl. Bank of Ga.	com	20,000	226,820	390,000
Colonial Penn Group	com	15,000	721,066	860,625
Combined Insurance Co. of America	com	12,000	354,316	106,500
Continental Oil	com	5,000	208,295	273,125
Deluxe Checks Printers, Inc.	com	20,000	753,375	610,000
Digital Equipment Corp.	com	7,500	619,233	764,062
Duke Power Co.	com	15,000	342,500	258,750
Eastman Kodak Co.	com	7,000	484,501	812,000
Eli Lilly & Co.	com	12,000	835,890	889,500
Emery Air Freight Corp.	com	5,000	323,638	299,375
Federal National Mortgage Assoc.	com	45,000	943,334	753,750
Fluor Corp.	com	6,000	150,016	352,500
Franklin Life Insurance Co.	com	24,500	662,313	637,000
General Reinsurance Co.	com	1,200	271,300	244,800
Government Employees Insurance Co.	com	15,000	716,350	637,500
Hanna Mining	com	15,000	812,276	765,000
Hewlett-Packard Co.	com	3,000	254,203	242,625
International Business Machine Corp.	cap	10,000	2,489,023	2,467,500
International Paper Co.	com	10,000	342,510	520,000
International Tel & Tel Corp.	com	17,000	904,947	448,375
Johnson & Johnson Co.	com	12,000	223,609	1,353,000
Kresge Co.	com	5,000	247,242	163,750
Marley Co.	com	10,000	517,557	310,000
McDonalds Corp.	com	8,000	562,215	456,000
Merck & Co.	com	10,000	523,426	807,500
MGIC Investment Corp.	com	2,500	186,905	82,187
Middle South Utilities, Inc.	com	10,000	230,765	168,750
Pfizer Inc.	com	10,000	456,602	430,000
Polaroid Corp.	com	3,000	333,393	209,625
Prudential Building Maintenance	com	25,000	561,485	112,500
Schering Plough Inc.	com	20,000	549,110	1,420,000
Schlumberger, Ltd.	cap	15,000	186,501	1,978,125
Sony Corp.	com	10,000	484,705	300,000
Southern Co.	com	5,000	137,963	80,000
South Carolina Electric & Gas Co.	com	10,000	250,000	165,000
Tampax, Inc.	com	4,000	295,950	228,000
TRW, Inc.	com	17,500	582,526	312,813
Virginia Electric & Power	com	30,000	540,000	435,000
Watkins Johnson	com	15,000	352,371	236,250
Xerox Corporation	com	7,500	760,021	920,625
Yellow Freight System, Inc.	com	4,000	177,175	158,000
Chase Manhattan Bank C/D			500,000	500,000
Ford Motor Credit Co. — Notes			2,381,000	2,381,000
			$26,966,566	$29,467,612

HISTORY OF UNIT VALUES

Valuation Date	Bond Fund	Stock Fund	Profit Fund
7/31/62	$ 1.00678	$ .82673	$ .84299
7/31/63	1.07228	1.03982	.74533
7/31/64	1.12346	1.25478	.64951
7/31/65	1.18096	1.31530	1.05750
7/31/66	1.12924	1.38824	.97052
7/31/67	1.17227	1.78819	1.78347
7/31/68	1.17991	1.98598	1.62488
7/31/69	1.14589	1.94687	1.48373
7/31/70	1.14710	1.66295	.73156
7/31/71	1.31717	2.29024	.82760
12/31/71	1.40732	2.48758	.95972
12/31/72	1.51755	2.91606	1.06316
3/31/73	1.51961	2.67692	.96267
6/30/73	1.53162	2.48256	.73135
9/30/73	1.54885	2.63325	.84405
12/31/73	1.56547	2.29810	.82842

The complete annual report of the Trustee is available for inspection, during regular first shift hours, in the Industrial Relations office serving your facility.

Historically Speaking . . .



THE X-21A Laminar Flow Control test airplanes were built from two Douglas WB-66D aircraft and were designed to flight test the Northrop LFC system. Northrop began its pioneering effort in LFC in 1949. The boundary layer is a very thin layer of air next to the surface of an aircraft in flight. When the flow of this air is uniform, the air flow is said to be laminar. But this is rare. The boundary layer generally breaks up into turbulent flow as it passes over wings and fuselage and this results in a sharp increase in friction drag. The company's answer to boundary layer turbulence was to put row upon row of tiny slots, looking like scribe marks running spanwise along the upper and lower surfaces of each wing. These razor-thin slots denoted a wing that 'inhales' air. Suction turbopumps mounted in under-wing pods pulled a thin film of boundary layer air through the slots, conduct it into inner-wing ducts, then expel it to the rear. This process retained a smooth flow of air over the wing surfaces by preventing the buildup of high-drag turbulence. Eighty per cent of friction drag was eliminated. This technique resulted in increases in range, payload or flight endurance of future aircraft. The X-21A made its maiden flight to Edwards AFB April 18, 1963.

Length: 75.5 feet
Wingspan: 93.5 feet
Wing Area: 1250 square feet
Gross Takeoff Weight: 83,000 pounds
Powerplant: Two General Electric 7E-J79-13 turbojets, each rated 9400 pounds of thrust at sea level
Crew: Five

FAA Presents Certificate to NWASI Employee in Alabama

T. R. Kirkland, an employee of Northrop Worldwide Aircraft Services, Inc., Fort Rucker Division, was the State Winner of the Annual Aviation Mechanic Safety Awards Program.

A sheet metal mechanic with NWASI, he was recently presented a certificate from the Federal Aviation Administration in Birmingham.

The awards program is a joint effort of the FAA, the Flight Safety Foundation, and the aviation community to pay tribute to mechanics who make outstanding contributions to air safety by maintenance practices.

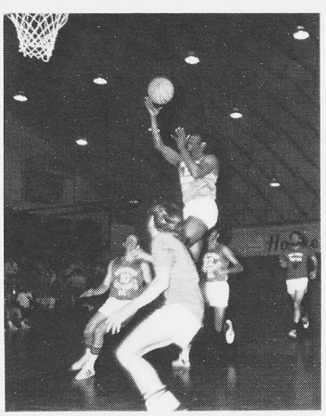
Mr. Kirkland's award was earned by the process he developed to apply a reinforcement to the trailing edge of the tail rotor blade on the TH-55 helicopter. This alleviated the splitting of the edge that occurred frequently, creating a condition that could affect the anti-torque control of the aircraft.

T. R. KIRKLAND, left, State Winner in the Annual Aviation Mechanic Safety Awards Program, receives certificate from Robert L. Hankins, center, aviation safety officer for the FAA office in Birmingham, while E. M. Mize, general manager, NWASI Rucker Division, looks on.

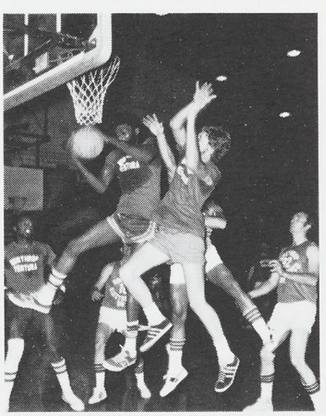
Second Annual All-Northrop Basketball Tournament

ELECTRO-MECHANICAL Division General Manager Frank W. Lynch presents perpetual trophy to champion Electro-Mechanical team, following 57-50 win over the Aircraft Division. Photos by Henry Jimenez.

AIRCRAFT'S BILLY Jackson controls ball despite triple-teaming by aggressive Electro-Mechanical players. Guard Vince Cunningham, right, was again the tournament high point man scoring 32 points in the opening round against Ventura, and then 21 points against the Aircraft Division in the championship game.



ONE OF THE few fast breaks the Electronics Division was able to make against Ventura is headed by Ralph Brown, with ball, as Ventura guard Charles Reeves awaits possible rebound. Ventura won, 72-40.



VENTURA DIVISION'S rebounding strength proved too much for the Electronics Division as Ventura captured third-place in the tournament held at Western High School, Anaheim.

Second Oldest Fullerton House Was Home to Ardis Adams

Ardis Adams, Configuration Analyst at the Electro-Mechanical Division, lived in a museum for a quarter of a century and didn't realize it. Her home from 1930 to 1956 was the place now known as "Heritage House" that is preserved on the campus of the California State University of Fullerton.

The house, a nostalgic example of Victorian architecture, is the second oldest home built in Fullerton. It was constructed in 1894 as the residence and office of Dr. George C. Clark.

Dr. Clark sold the place in 1907 and it subsequently had 10 other owners before Mrs. Adams' father bought it in 1929. He still owned the house in 1972 when it was sold to the City of Fullerton who deeded it to the North Orange County Board of Realtors. The board arranged for the 80-year-old structure to be moved to the university campus where it is being fitted into a museum of the city's early days.

Mrs. Adams moved into the house in 1930 when her father, W. S. Eicher, bought the property with the intention of building a drive-in on it. "I guess he grew to love the place for he never tore it down," she said.

"It was a charming place to live with high ceilings, gabled roof and gingerbread decorations," Mrs. Adams recalled. "I didn't fully realize its charm until I moved out. I think my fondest memories of the place are of the Sunday family gatherings when everyone came to our home."

Mrs. Adams moved in 1956 because she wanted more modern conveniences. However, the old house remained in her family. It was rented until 1972 when it had to be moved to make way for a street-widening project on Lemon Street in Fullerton.

"During the years the house was rented," she said, "it was very popular with young people. Students loved to live in it. And for years people were always stopping to take pictures of the place."

When the house had to be moved, the North Orange County Board of Realtors spearheaded a drive for funds to save the house as a relic of Fullerton's beginning. The drive, plus city funds, permitted the old house to be moved to the college campus where it was placed in the Arboretum and can be seen just off the Orange Freeway on Yorba Linda Boulevard where Associated Road ends. A fire partially destroyed the roof, which has since been replaced. A drive is now under way to furnish it in the style of the Victorian period in which it was built.

ARTIST'S DRAWING of 'Heritage House' as it will look when it is furnished in the style of the Victorian period in which it was built.

Gold Medal Is More Appealing Than Diamonds to Joy Ellingson

Maybe the old adage, "A diamond is a girl's best friend" should be revised, for Joy Ellingson, 13-year-old daughter of Bill Ellingson, coordinator ROC programs, Aircraft Division, Mariposa, seems to think a gold medal would be more appealing.

JOY ELLINGSON

Joy hopes to someday represent the United States in the Olympic Games and bring home the first American gold medal in fencing.

Joy has taken another big step towards that goal by winning the U.S. Junior Olympic National Fencing championships held in Tallahassee, Fla., in February. Competing in the women's 16 and under division, Joy took the measure of the best lady fencers from throughout the country.

One week prior to the national competition, Joy won the Los Angeles Municipal Games held at L.A. City College and earned the Outstanding Junior Fencer of the Year award from the L.A. Athletic Club. She also won the Marion Vince trophy indicative of the championship of the Southern California division.

Hoch Proves That Pineapples Can be Grown in California

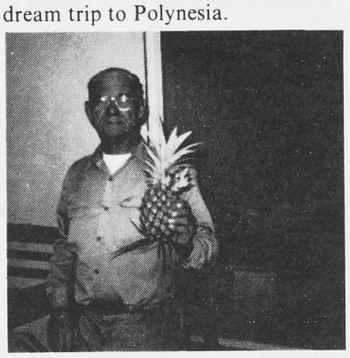
When Ralph Hoch, welder, Aircraft Division Maintenance, and his wife Helen, returned from their Polynesian tour in 1970 they figured they had enough memories and souvenirs to last several years, and they were right.

Some 38 months after their return, the Hochs began harvesting their own pineapples grown from cuttings of plants they had brought back with them.

Ralph had purchased six pineapples at the airport prior to their departure from Hawaii, and following the instructions on cutting and planting procedures, has grown his own crop of pineapples at their Torrance residence.

Using a makeshift greenhouse of plastic and wood, Ralph has harvested four pineapples to date much to the surprise of their friends and neighbors who said it couldn't be done in California.

Ralph has already recut the new fruit and planted for the next crop due 36 months from now when he and Helen will again relive their dream trip to Polynesia.



RALPH HOCH holds his first pineapple grown from cuttings of plant he brought back from Hawaii.

BARRELING BOBSLED, a high-speed glide down the Matterhorn is always one of the most popular activities at Disneyland. Northrop employees will be able to participate in this, and all attractions, shooting galleries excepted, at the 11th annual NRC Nite at Disneyland on Saturday May 18 from 8:30 p.m. to 1:30 a.m. Tickets are on sale now at all Northrop facilities for $4.75 per person. Children two years and under, free. For more convenience in parking, which is free, and avoiding congestion, gather your families and friends and share the ride to Disneyland.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is noon the second Monday of each month.

Vehicles For Sale

Mercedes Benz, 1961, 220S, 4-dr., reblt, eng., 1,800 mi., $2000. 213-372-7781.

Pickup, 1960 Chev., shortbed, 327 eng., 4 spd. Muntzi box trans., 20,000 mi., $850. 213-676-2810.

Chevrolet, 1964, 4-dr. Impala, r/h, $300. 213-778-8610.

Opel Rally, 1968, 1.9L eng., 4-spd. trans., r/h, $625. 213-676-4573.

Cadillac, 1963 4 dr., new tires, 40,000 mi. on eng., $300. 213-370-9037.

Pickup, 1965 Chev., 36,000 mi., '69 307 Nova eng., $900. 213-376-9600.

Chevrolet, 1970 Monte Carlo, auto., V-8, p/s, p/b, air, AM-FM stereo, $2300. 213-754-6017.

Volkswagen, 1966, $750. 213-329-0229.

Chevrolet, 1958, 2-dr. Delray, 348 eng., 3-spd., $400. 213-675-6908.

Plymouth, 1971 Roadrunner, 383, 4-spd., stick, 28,-000 mi., $2200. 213-779-4993.

Subaru, 1972, take over $71.66 mo. pymts., approx. bal. $1800. 213-753-6813.

Motorcycle, Honda 90, $175. 714-892-8251.

Miscellaneous For Sale

Skis, Millers XXL w/bindings, $100. 213-634-5671.

Precision Lathe, Unimat, 3 jaw chuck & extras, near new, $115. 213-675-4306.

Tires, 4 size E78-14, $10. 213-676-7357.

Reloader, 12 ga., manufactured by Shellpack, $20. 213-429-9487.

Tires, 2 G-60x14 widetrack super 60s, $50. 714-523-2556.

Dining Set, black metal table, formica top, 6 matching chairs, $60. 213-541-1913.

Dining Table, teak, Danish, $80. 213-374-6530.

Stock, 300 shares in Roaring Camp, an 1880's town w/steam train ride through the big redwoods, $2.75 share. 714-527-5212.

Pups, mixed toy poodle, black male, & white male, 8 wks. old, $35 & $25. 213-675-6081.

Lawnmower, power, reel type, $25. 213-860-9451.

Bicycle, girl's Stingray Schwinn, $25. 714-635-2539.

Carpet, Persian Tabriz, 4' x 6', $550. 213-375-9377.

Clarinet, Selmer - French, B flat, $225. 213-377-8508.

Encyclopedia, 16 vols. Britannica Junior, latest edition, $149. 213-248-9654.

Shotgun, Miroku - Charles Daly, 12 ga. over & under, factory fired only, complete w/molded fiberglass case, $300. 213-325-7888.

Target Pistol, Smith & Wesson, mod. 41, hvy. barrel, $125. 213-675-5258.

Coaster Bicycle, girl's 26", $30. 213-676-8321.

Luggage, ladies Samsonite Silhouette, white, 5 pcs., $135. 213-375-5360.

Rug, 9 x 12, wool, $40. 213-327-6918.

Typewriter, Remington standard, $75. 213-674-0553.

Stove, gas, $75. 213-483-6789.

Chord Organ, Magnus elec., model 1391, $20. 213-376-4831.

Bicycle, boy's 26" Oxford, 3-spd., 8 mos. old, $35. 213-889-6178.

Cylinder Heads, 2, for 289 eng., ready to install, $19. 213-834-3290.

Pups, champ. stock, AKC reg., tri-color, male & female Bassett Hound, $125. 213-328-4408.

Hutch & chest, desk, dresser, for girl's bedroom, white, $50. 213-372-2860.

Range, gas, O'Keefe & Merritt, oven & broiler, $150. 714-544-0730.

Sofa, Riviera convt., $30. 213-644-1768.

Organ, Hammond B3 w/sep. PR 20 spkr. sys., rarely used, $2000. 213-344-2655.

Washer, portable apt. size & dryer by Penncrest, $100. 213-676-5237.

Tires, 4 Michelin steel belted radial w/w, 225x15", never mounted, $240. 213-756-1812.

Golf Cart, $25. 213-943-0657.

Miscellaneous For Sale

Sterling Silver, 4-pc. place setting for 6. Wedgewood pattern, almost new, $57.50 setting. 213-474-5726.

Diamond Ring, ladies' heirloom, 80/100 ct. solitaire in platinum setting w/16 small diamonds, replacement value over $1200, $975. 213-644-4638.

Spring, box & mattress, dble., frame, $35. 213-674-8610.

Car Seat, Strolee Autosafe, reclines, never used, 1974 mod., $12. 213-837-5551.

Harvest Table, maple, dropleaf, w/pads & 4 chairs, $70. 213-467-0639.

File Cabinet, office type, 18x30x36, 3 drwr., $50. 213-530-1252.

Couch, brown & turquoise, Colonial, 7', $20. 213-530-4803.

Bicycle, Stingray, $15. 213-831-0930.

Refrigerator, General Electric, w/top freezer, 2 yrs. old, $175. 213-326-0163.

Sailboat, Coronado-15, complete w/many extras, incl trailer, $1175. 213-374-4241.

Lumber, misc., incl. 2 big beams, $30. 805-498-2867.

Table, maple, rectangular, 30"x60", w/dropleaves & 2 matching chairs, $25. 213-677-7421.

Stole, Azurine mink, 1½ yrs. old, worn twice, $425. 213-835-3869.

Stove, 1971, avocado, Delux Sears Mod., timer-clock, teflon griddle, extra lg. oven, $125. 213-370-8229.

Refrigerator, Admiral 11 cu. ft., top freezer, new compressor, coppertone, $49. 714-871-3748.

Bicycle, men's 10-spd. Shimano, $85. 213-370-6896.

Calculator, Texas Instruments SR-10, $95. 213-924-4562.

Camper Shell for 8' bed, $75. 714-893-5564.

Cemetery Lot, Forest Lawn Hollywood Hills, single, developed space, $315. 213-393-6513.

Wheel Covers, set of 4, deluxe-chrome, for Camaro, $15. 213-860-9451.

Refrigerator, Frostless, .16 cu. ft., Coldspot, $85. 213-756-3669.

Range, Amana Radar, & browning skillet, 1974 mod., never used, $350. 213-428-1033.

Stove, Gaffers & Sattler, Calif. gold, gas, 4 mos. old, $150. 213-678-1649.

Wanted To Buy

Wheels & axles, soap box derby. 213-375-7978.

Motorcycle Honda 500 or 550 CB stock, in good condition. 213-534-5407.

Skis, 150 cm Hart, Fisher or Head, reasonable price, 14-yr-old beginner. 213-360-7198.

Frame Tent & 350cc motorcycle. 213-378-5494.

Air Conditioner, 8 - 12,000 b.t.u., for house or motor home. 213-541-3280.

Piano, upright. 213-835-0595.

Dinghy, 6' to 8', reasonable condition, w/oars. 213-375-5305.

Bowling Ball, 8-lb. 213-375-9340.

Canoes, for Boy Scout Troop 280, approx. 16' long, will buy or accept as gifts. 714-897-6992.

Personals

Many thanks to all my co-workers who contributed toward my lovely gifts, cake, & farewell luncheon. In addition, thanks to all of you in so many areas that I have worked with, for your personal help. PAT HOLLADAY.

I would like to take the opportunity to thank all my dear friends & co-workers in the past 21 years working at Northrop & making my retirement a happy one. W. F. SCHMIDT.

Wish to thank my friends in Dept. 3491 & the Shipping Dept. for the flowers & cards on the passing of our father & husband. MARGARET, M.R. "BUD" SHELP & FAMILY.

Rider wanted, El Toro, Laguna Hills area to Aircraft, 7 a.m. - 3:42 p.m. Aircraft Div. ext. 1729. 714-586-2344.

Share ride from the Valley, Canoga Ave., & Ventura Blvd., Woodland Hills, 1:12 a.m. - 8 a.m., Aircraft Div. ext. 1904. 213-347-2665.

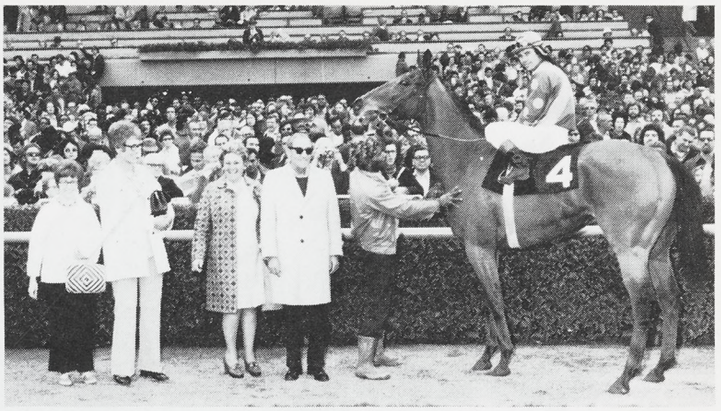
Wanted, female roommate, 23-32 yrs. old, to share 2-bdrm. apt., $80 plus utilities. 213-536-2485.

Furniture, used, for donation to needy family, from bedding to appliances, all types, contact NorAid Chairman Jo Roth, Aircraft ext. 2455.

Free

Kittens, all colors. 213-545-9996.

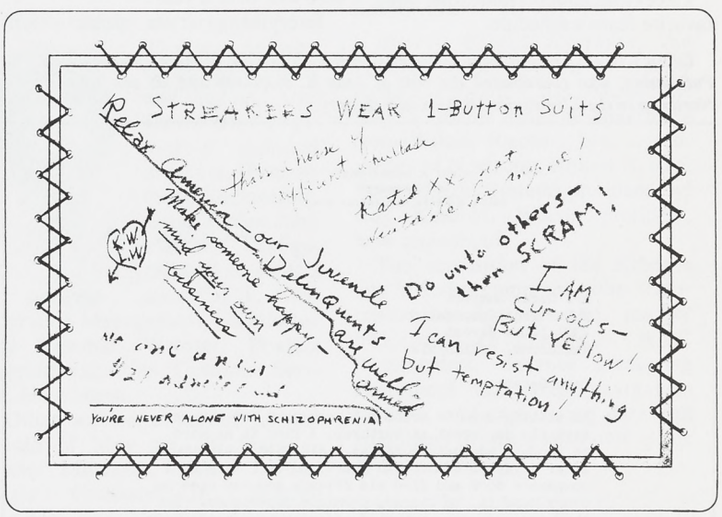
Pup, sheltie & cocker mix, 10 wks. old. 213-676-1580.



IT WAS NORTHROP DAY AT THE RACES at Santa Anita on Mar. 10 and Spud Patch with Howard Grant up galloped home in the third race which was dedicated to the Northrop Recreation Clubs. Delighted were Meg Wirth and Virginia Johnson, left, of the Electro-Mechanical Division, posing with owners Marion and Robert Frankel, the groom, jockey and — of course — Spud Patch himself. Another Northrop Day at the Races will be coming up June 15 at Hollywood Park. See Personnel Activities for details.

NORTHROP GRAFFITI

Graffiti has suddenly become respectable, with movies about it, psychological studies, and more and more blackboards being installed in strategic places to accommodate the creative urge. We present herewith the latest we've seen (suitable for publication). The next time you have the urge to author something timeless, don't write it on the wall — send it to "Northrop Graffiti," c/o the Northrop News. Who knows, Shakespeare may have started this way!



MOTORCYCLE FINANCING

The Northrop Hawthorne Credit Union board of directors recently approved financing of new motorcycles, so if you are thinking about getting one, see or call your Credit Union representative.

NORTHROP NEWS

Vol. 32 **No. 4**

Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Peter Goodall, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher. Correspondent, Northrop Hueneme, and editor, Spanish language edition: Joe Anguiano.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

Men's, Ladies' Softball Teams Ready for Play

Both the ladies' and men's teams competing in area recreational softball leagues appear to be solid contenders for championship honors this season, according to Ervin Schott, men's softball commissioner, and Greta Tabon, acting ladies' softball commissioner.

"The Lightweights have a year's experience under their belts and are vastly improved defensively this year," Greta noted. The ladies, coached by Stu Leigh and Ray Hofius, will begin play Wednesday, May 1, in the North American Girl's Softball League playing at North American Field on Imperial Highway.

League play has already begun for the nine teams in Northrop's own NRC Softball League with games being played on Tuesday evenings at Alondra Park, and Wednesday evenings at Eucalyptus Park, Hawthorne.

Check the bulletin board for your favorite team's schedule.

ELECTRONICS BASKETBALL TEAM

Missing Something? Try Looking in Lost and Found

Many personnel evidently are not aware that there is a Lost and Found Center at the Palos Verdes and Hawthorne facilities for, according to Buck Pennington, Security, "Some of these items have been in here well over a year."

Everything from prescription glasses, jewelry, keys, and various items of apparel have been turned into the lost and found but no one seems to be interested in claiming any of it.

If you have lost an item stop by the Security office in either facility and give a description of the item and possibly they have been holding it for you all along.

Division Cagers Finish Fourth At Tournament

The Electronics Division finished fourth in the second annual all-Northrop NRC Basketball Tournament hosted by the Electro-Mechanical Division Apr. 3 and 5 at Western High School, Anaheim.

In the opening round, the team coached by Floyd Wright and Pete Casey, stayed even with the highly favored Aircraft Division squad and was deadlocked, 30-30, at the end of three quarters. But turnovers plagued Electronics in the fourth period and Aircraft went on to post a hard fought 44-39 win.

Electronics then dropped a 72-40 decision to the Ventura Division in the third-place contest. The Electronics Division will host next year's tournament and, according to Floyd who is also NRC basketball commissioner, "We plan on reversing this year's performance; we'll be ready."

The members of the squad in addition to player-coach Floyd Wright were: Warren Weimer, Ed Subia, John Bonini, Pete Sutherland, Jim Wood, Ralph Brown, Jack Ferguson (Capt.), and Marshall Lamm.

SERVICE AWARDS

Service anniversaries are being celebrated by 11 personnel in the division and three of them are observing 20-year's service with Northrop. They are: Helen Bean, Western Avenue Warehouse; Frank Vance and Truman Brown, Hawthorne; 15 years — Gilbert Stockwell, BSL - Hayward; 5 years - Paul Savage, Field Service (Delaware); Johnnie Espinoza, John Bowman, Floyd Wright, Howard Robinson, Norman Peery, and Sharon Ferrante, all of Hawthorne.

HAND crafted belts, purses, book covers, and items of apparel are just some of the things members of the Leathercraft Club are learning how to make. The club meets on the second and fourth Tuesdays of the month in the NRC Clubhouse. All personnel are invited.

Editor's Note: The following letter was received by Oscar Gumpert, senior buyer, Purchasing, who coordinated the visit of John K. Northrop and his son John H. Northrop to the Electronics Division in February.

JOHN K. NORTHROP
485 VIA HIERBA
SANTA BARBARA, CALIFORNIA 93110

March 2, 1974

Mr. Oscar Gumpert
% Northrop Corporation
2301 120th Street
Hawthorne, California

Dear Oscar:

In sitting down to write a "thank you" for the remarkable day spent at Northrop, I find it as hard to produce adequate words as I did when I was there. After a gap of twenty-two years, to walk through a corporate door and find old friends and new ones on every hand is, in itself, a unique experience. But when every person contacted offers a warm hand clasp and a big welcoming smile, the recipient really cannot believe it is happening.

I'm afraid the Electronics Division didn't get much done on last Wednesday, as it seems to me that everyone was busy doing something to make my visit happily intriguing. However, the accomplishments that Son John and I saw were completely incredible, as were the intricate jewels which made them possible. You really opened up a proud new world to us.

The beautiful plaque will find a major spot in my den. The only trouble is that it should be mounted on bearings so that one could see both sides without removing the plaque from the wall.

I hope you will pass on to all who took part in my visit my heartfelt thanks for a day which will be treasured in memory as long as I live.

Gratefully,

John K. Northrop

JKN mcn

Two New Leagues Added for Bowlers

Something for everyone is the theme of the summer bowling schedule now being formed by the NRC and according to Rosalie Smith, Aircraft Division commissioner, "We have added two new leagues to accommodate all members of the family."

Latest additions to the agenda are a junior league for 9-13 year olds beginning in May at Missile Bowl, Gardena, and a noon league for second shift personnel at South Bay Bowl. For details contact: Rosalie, ext. 2603; Bill Myerson, ext. 6569, Mariposa; Otha Stubblefield, ext. 663, Electronics; Bill Booth, ext. 471, Palos Verdes; or Mike Tomasello, ext. 551, Electro-Mechanical.

COMMITTEE

(Continued from page 1)

personnel in the committee meetings because the discussions and recommendations made can contribute to, and assist in division personnel management practices.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 32, No. 5 | May 1974

Defense Systems Dept. Awarded B-1 Subcontract

The Electronics Division has received a $50,000 contract as the first part of a multi-million dollar program from the AIL Division of Cutler-Hammer, Inc. for engineering development of portions of the U.S. Air Force B-1 Strategic Bomber electronic countermeasures system. AIL is prime contractor for the B-1 Radio Frequency Surveillance/ECM System.

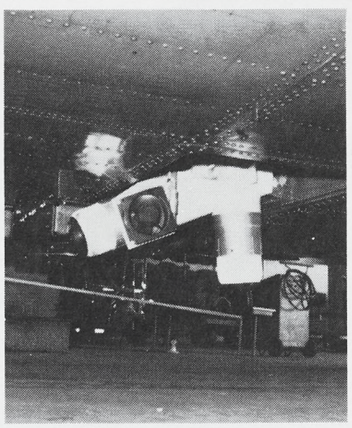
The subcontract award, which provides for development of transmitters for the subsystem, will be accomplished at Northrop's Defense Systems Department facilities in Rolling Meadows, Ill. Northrop, through its Defense Systems operation, has been involved since the mid-1960s in development of advanced electronic countermeasures which led to the current contract.

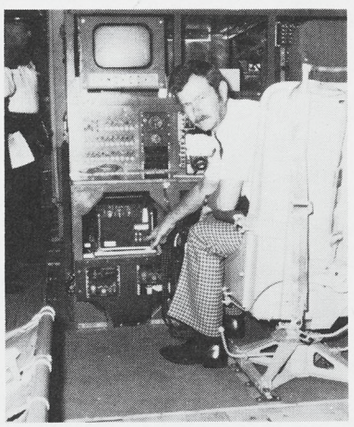
The B-1, now being developed by Rockwell International in Los Angeles, is slated to replace the subsonic B-52 fleet as the U.S. Advanced Strategic Bomber in the 1980s.

COURSE OFFERED

A course in "Effective Listening" will be offered Saturday June 15, at the NRC Clubhouse under the direction of Jud Morris, Personnel Development and Training. To sign up contact Employee Relations.

Mr. Morris recently received a letter of gratitude from the office of Bert Pine, Los Angeles city attorney, for conducting the one-day course for his new staff of hearing officers at City Hall.





SENSOR TRACKING unit of the PATH flight test system protrudes from floor hatch of U.S. Army CH-53 helicopter, while on right, Gordon Singleton points out electronics control unit aboard aircraft.

Ruth Geller's 30th Anniversary Highlights May Service Awards

Ruth S. Geller, senior project controller, Hawthorne, is marking her 30th service anniversary with Northrop this month and heads a list of 15 employees observing anniversaries throughout the division.

Ruth's first job was on the P-61 Black Widow program during WWII where she worked as an assembler. From there she worked in Reproduction and then in 1948 became a secretary in Engineering.

In 1951 Ruth moved into Engineering Planning and in 1957 was among the first group of employees to comprise the newly formed Nortronics Division.

A member of Forward Planning since 1969, Ruth is a member of the Management Club and has held the position of treasurer.

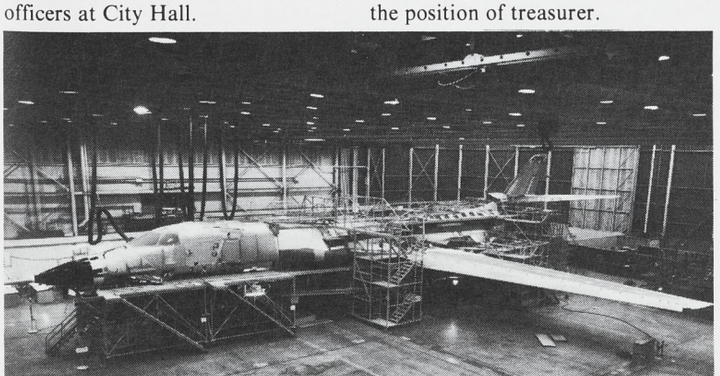
Ruth Geller

Three employees are observing 25-year anniversaries during May and they are: Alan Dudacek, engineering technical assistant, Development Engineering, Palos Verdes; John Fletcher, configuration data control specialist 1, Configuration Management, Hawthorne; and Newman Webster, Product Support technician, Customer Service, Hawthorne.

Other service awardees for the month of May are: 20 years — Norio Mitsuoka, Palos Verdes; Edgar Gaudette Jr., Warren Cowden, and Theodore Deguisne, all of Hawthorne; 10 years — Joseph Hamer, Palos Verdes; George Baggs, Hawthorne; 5 years — Ronald Olson, BSL-Hayward; Eddie Hamze, Hawthorne; Gerald Braga, Steve Vavrek, and Marion Morgan, all of Palos Verdes.

Hawthorne to Hold Blood Drive in June

The initial Blood Drive of the year will be held Wednesday, June 5, at Hawthorne from 9 a.m. to 1:30 p.m. in the cafeteria annex. All personnel are urged to keep their appointments for the blood drive and if signup information is needed contact Arnah Pakes, ext. 261, Medical, Hawthorne.



ROCKWELL INTERNATIONAL'S B-1
(Photo courtesy of Rockwell)

PATH System Successful in Initial Flight

The Tactical Avionics Department's Precision Approach and Terminal Hover (PATH) system operated successfully during its initial flight onboard a U. S. Army CH-53 test helicopter May 1 at the Naval Air Development Center (NADC), Johnsville, Pa.

According to T. C. Leighton, PATH project manager, "The PATH hover position tracking system locked on and tracked easily

(See PATH, page 8)

Wilcox Airborne Line Sold to Sperry

Sperry Flight Systems, the Phoenix based division of Sperry Rand Corporation, has acquired the Wilcox line of airborne electronics from Wilcox Electric, Inc., a subsidiary of Northrop, Robert B. Roe, Sperry Flight Systems president and Roy Kaufold, Wilcox president, have announced.

The acquisition of the airborne line includes communication transceivers, navigation and marker beacon receivers, ATC transponders, distance measuring equipment and area navigation systems, and engineering data and completed avionics units now in the Wilcox inventory.

RESIDENTS of the Magic Kingdom are all prepared to 'beat the drum' for employees during Northrop Family Night at Disneyland this Saturday from 8:30 p.m. to 1:30 a.m. Share the ride on out with a fellow employee and bring the whole family.

Canadian Litigation Team Undertakes Huge Project

Planning, data collection, research and analysis — of a size and scope normally associated with the early stages of the development of a new aircraft — is taking place almost unnoticed in a back-hallway office at the Aircraft Division in Hawthorne.

The nameplate on the doorway says simply "Canadian Litigation", and unlike new aircraft projects which normally grow into massive production lines with attendant procurement, stocking, tooling, scheduling and control activities requiring hundreds of people, the area devoted to the project is not expected to be enlarged — or even noticed by many.

Inside this rather austere office complex, Ralph Seifer, Canadian Litigation project leader, heads a team of Northrop experts gathering and cataloging hundreds of thousands of pieces of data from all parts of the Aircraft Division which is being assembled for use in support of a $17.5 million damage suit filed against the Government of Canada by Northrop last December.

Damage Claims

The damage claims are a result of a production program for the CF-5 (a version of Northrop's F-5 fighter) built in Canada under license from Northrop, and, according to Mr. Seifer, "could result in a payment to the company of a magnitude comparable to the profits from an order for 200 aircraft.

"We expect a long and difficult litigation, but our team is prepared for it, and the resources of the entire corporation are at our disposal for support of the suit," said Mr. Seifer.

The team consists of five Northrop people besides Mr. Seifer, representing a variety of disciplines, but all pertinent to F-5 planning, engineering and production.

Charles Rowbotham is manager of Commercial and International Contracts for the Aircraft Division. Clyde Rockey is also an experienced contract representative — both associated with the F-5.

Louis Unmack is a manufacturing engineer, and has participated in the T-38 as well as the more recent F-5 programs.

Joe Mulqueen was the Canadian project engineer, involved in the license program between Northrop and Canadair, Ltd. of Montreal. Violation of this license agreement by Canadair and the Canadian Government gave rise to the litigation.

Ralph Seifer, an F-5 configuration engineer, is now in his third year of law school. Mr. Seifer's strong interest in and pursuit of a law career led to his assignment to gather and coordinate all the data available on the Northrop/Canadian program, which also involves assisting Northrop's attorneys in preparing our case.

Becky Sutton is responsible for properly filing the voluminous data which comes into the Canadian Litigation office daily, as widely scattered Northrop people discover material in their files which could bear upon the project, and forward it to her.

No Glamour Here

The glamour of busy assembly lines, gleaming hardware or sophisticated tests may be missing, and there will never be a "roll out" from this activity, but the Canadian Litigation team members say "just wait — our efforts might not be noticed now, but they're important. After the matter is tried and a judgement is obtained, who knows, one of our files might be unveiled to the music of a brass band with a special issue of the Northrop News to recognize the significance of our accomplishments."

CATALOGING AND assembling data from all parts of the Aircraft Division is the Canadian Litigation team, clockwise around the table, Lou Unmack, Clyde Rockey, Joe Mulqueen, Becky Sutton, Ralph Seifer, project leader, and Charles Rowbotham.

Sales, Income Up for First Quarter of 1974

Northrop net sales and income for the first quarter of 1974 were both 43 per cent higher than in the corresponding period of 1973, according to Thomas V. Jones, president.

Sales in the first quarter of 1974 were $189,132,000, compared to $132,165,000 a year ago. Our net income for the period totaled $2,534,000, compared to $1,767,000 for the first quarter of 1973.

Net income for the first quarter of 1974 was equivalent to 65 cents per primary share versus 42 cents for the same quarter in 1973. Fully diluted earnings per share were 58 cents compared to 39 cents a year ago. On Mar. 31, 1974, there were 3,661,172 shares outstanding, compared to 3,871,617 shares a year earlier.

Northrop's order backlog at the close of the quarter stood at $1,199,700,000, a new company record and 51 per cent higher than the $793,600,000 at Mar. 31, 1973.

Mr. Jones cited particularly the increased deliveries of the F-5E International Fighter aircraft.

Van Allen Appointed Member of Tahoe Regional Planning Agency

Robert G. "Bob" Van Allen, controller, Northrop Research and Technology Center, has been appointed a member of the governing body of the Tahoe Regional Planning Agency (TRPA) by California Governor Ronald Reagan. Concurrent with this appointment to the TRPA is an appointment to the California Tahoe Regional Planning Agency.

Mr. Van Allen

In addition to his administrative experience, Bob's involvement in the Sierra Club helped to qualify him for the appointment. An active member in the Sierra Club since 1963, Bob has assumed leadership in almost every facet of the club's function and is currently on the Angeles Chapter's executive committee and financial advisory committee, as well as serving on the Sierra Club budget committee.

Bob is an avid mountaineering enthusiast and was instrumental in the formation of the Northrop Mountaineers Club which he served as commissioner. In 1964, he was elected Northrop Recreation Club president. Bob's wife Vicki is also active in the Sierra Club and is an accomplished mountain climber. Between them they have over 800 ascents.

The primary function of TRPA is to formulate and maintain a regional plan for the Tahoe Basin. TRPA is the first national effort to include environmental planning into an interstate regional framework. The planning includes five elements: land use, transportation, conservation, recreation, and public services.

PROBEYE — Firemen's Aid in Finding Hidden Fires Proves Out in Practice

An infrared viewer system suggested by Bill Armstrong when he was Northrop's technology adviser to the city of Anaheim is proving out in practice, according to an announcement from the city's Fire Department.

Bill Armstrong suggested the device, manufactured by Hughes, to aid the firemen in finding hidden fires and hot spots that might break out again.

Two typical in-service uses of the infrared system were reported by the fire department battalion chief:

"An automatic alarm system sent crews rolling to the Lutheran Home complex. A quick check showed no evidence of fire. Normal practice would be a cottage-to-cottage search for the heat source that triggered the alarm. This would have taken an hour, disturbing and alarming residents. Using PROBEYE, officers checked the entire complex, locating the heat source in 15 minutes.

"In another incident a small fire in a residential kitchen was extinguished and a search for in-the-wall hot spots completed as quickly."

Mr. Armstrong has since been appointed manager, Marketing and Planning for Northrop Services, Inc., and was succeeded in the city of Anaheim as technology adviser by Owen Griffith. The Anaheim technology exchange program is part of the federally funded California Four Cities Technology Transfer Program.

Ventura Engineers 'Keep 'Em Flying'

"Keep 'Em Flying" was a slogan used in World War II, but it really applies to the task of the 17 Northrop Ventura engineers and technicians stationed at the Army's White Sands Missile Range, N.M.

Their task is to keep the Variable Speed Training Target (VSTT) drones in operation during the current test and evaluation flights.

Under the direction of Test Site Manager W. L. Bridwell, the talented crew usually can launch, recover, repair and ready a VSTT for its next flight in as little as three days.

Frequent high winds and dust storms which sweep the mountainous high desert country surrounding White Sands Missile Range are just some of the normal problems encountered.

Day Starts Early

The VSTT's fly over a land rich in the history of the "Old West" where once Billy the Kid roamed along with Geronimo, and early Spanish and American explorers.

Northrop personnel live in nearby Las Cruces, N.M. and El Paso, Tex.

A day when a VSTT is to be flown starts early in the morning with final preparations of the drone in the large concrete building next to the office and engineering building.

Final Checks

Next, the drone is taken to the launch area some 300 yards away and there all final checks are made. Meanwhile, the Army's Range Control monitors the various ranges making sure the VSTT has a clear range and all instrumentation is working.

Shortly before launch the recovery crew starts by truck to the designated recovery area as military police set up area roadblocks as a safety precaution.

After recovery, the drone is brought back to the main building and there is minutely examined. Next it is literally taken apart; electrical and mechanical systems checked and repairs made. Again, checkout and ground testing is done, recovery parachute is packed into the drone and it is once more ready to take to the air.

Personnel

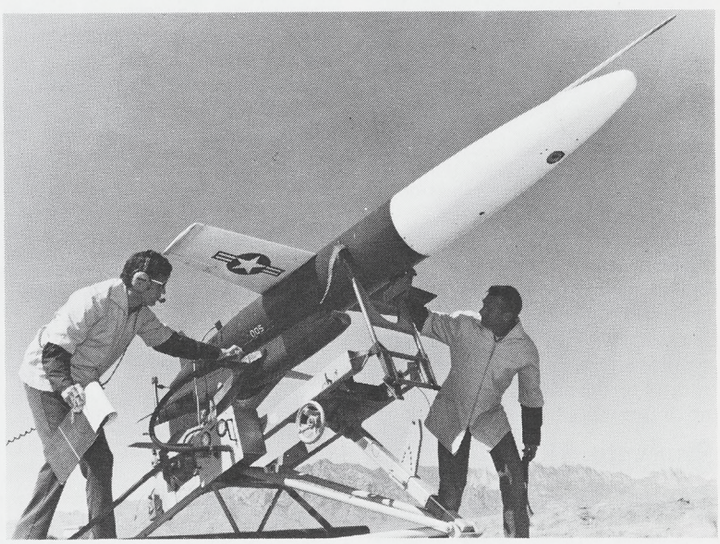
Division personnel forming the efficient crew which makes all this possible include Les Shaw, Pete Keating, Loren "Ace" Adams, Dave Coe, Bob Reed, John Cushman, Joffrey Garrick, Wayne Walker, Joel Murphy, Ken Johnson, Leo Alirez, Leo Herrera, Oscar Cease, Mike Schmidt, Elmer Phillips and Clarence Tacquard.

Engineers and technicians from Newbury Park also augment the crews.

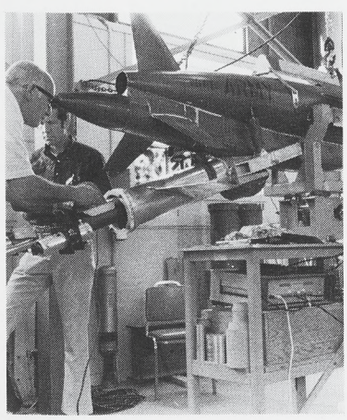
The current test and evaluation phase of the Northrop VSTT Program is scheduled to end the latter part of June. Then the Army will determine if the VSTT has met and fulfilled its specified tests. If it has, a production contract could result for the division which once again would be furnishing target drones to its oldest customer — the U.S. Army.

PHOTOS BY BOB THORNTON

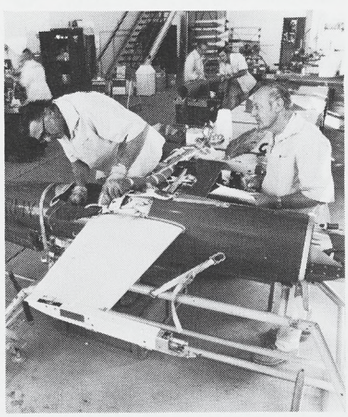
PLOTTING the course the new Northrop VSTT target drone will fly are Loren 'Ace' Adams, left, and Ken Conger. Administrative and Engineering offices are located in a single building at the Army's White Sands Missile Range. A total of 17 Northrop personnel are stationed at White Sands under the direction of W.L. Bridwell.



READY for launch is this Northrop VSTT as safety pins are removed by John Cushman, left, and Elmer Phillips. Test and evaluation flights are currently under way at the Army's White Sands Missile Range, and are expected to end the latter part of June.

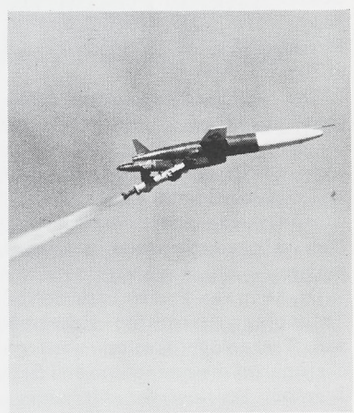


WEIGH-IN as well as various adjustments and measurements are just part of the job of getting another Northrop VSTT flight ready. At left, Oscar Cease, Quality Control, inspects JATO as John Cushman ponders a problem.



PARACHUTE RECOVERY SYSTEM is carefully packed into the VSTT target drone by Clarence Tacquard as Dick Roberts, Quality Control, inspects operation. Drone will later be flown over the missile range as part of series of tests.

FINAL CHECKOUT is under way at the Army's White Sands Missile Range as Northrop personnel from the Ventura Division make the VSTT target drone ready for flight. From left are Dick Roberts, John Cushman, and Bob Reed.



UP AND AWAY goes Northrop's new VSTT target drone during a test and evaluation flight. The JATO bottle releases and parachutes back to earth as the drone continues on under power from its turbojet engine.

Two Northrop A-9 Prototypes To Fly New Roles for NASA

The two A-9 prototype aircraft developed by Northrop as contenders in the A-X close air support competition, have been turned over to the National Aeronautics and Space Administration to fly peacetime research missions. Since Fairchild-Republic's A-10 was chosen as the contract winner, the A-9s have been flown by the Air Force.

The single-place, twin-engine planes will be used by the NASA Flight Research Center at Edwards AFB to help solve flight hazards associated with wake vortices tailing behind large aircraft; mother ships to launch drones in the center's work with Remotely Piloted Research Vehicles (RPRVs); and possibly in future studies leading to aircraft designs which would produce less in-flight noise.

One of the A-9s will be used to fly the missions now planned while the other will be used for maintenance support.

The first of the two A-9 aircraft made its maiden flight in May 1972, and each flew more than 150 hours during the Air Force evaluation of the A-9 and A-10 prototypes.

In the studies surrounding wake vortices, the A-9's unique speed brakes and lift dampers will be evaluated as devices for alleviating the vortices which have caused many smaller aircraft to be thrown out of control by the unseen turbulence left up to five miles behind large aircraft such as the C-5 and Boeing 747.

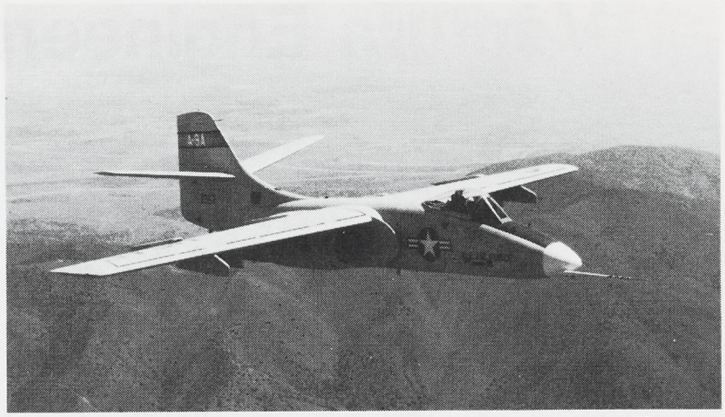
The A-9 also will be used as a test bed to carry other wake alleviation devices that are being tested in wind tunnels and on radio-controlled model aircraft.

NASA is flying RPRVs as an economical and less-hazardous method of testing advanced aircraft and space vehicles. The A-9 will be used as the mother ship to air launch the pilotless vehicles controlled from a ground station.

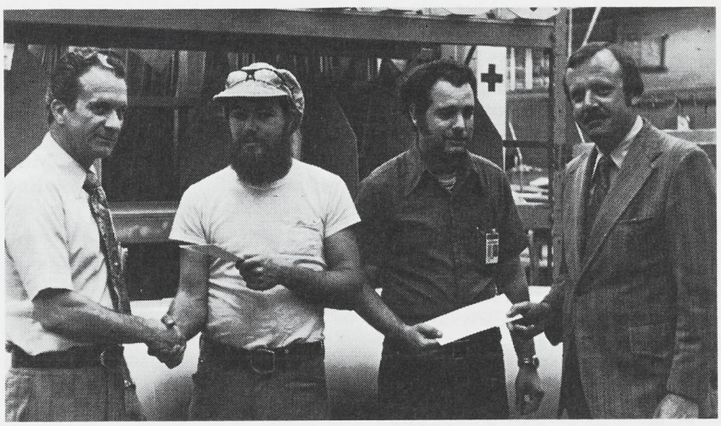
Third Program

The third program under consideration would use the A-9 in the center's non-propulsive aircraft noise program, aimed at measuring the amount of noise created by the aerodynamic features of an aircraft such as configuration, flap settings, and protrusions such as extended landing gears. The tests are planned over a specially instrumented range with the engines on the various test aircraft intentionally turned off.

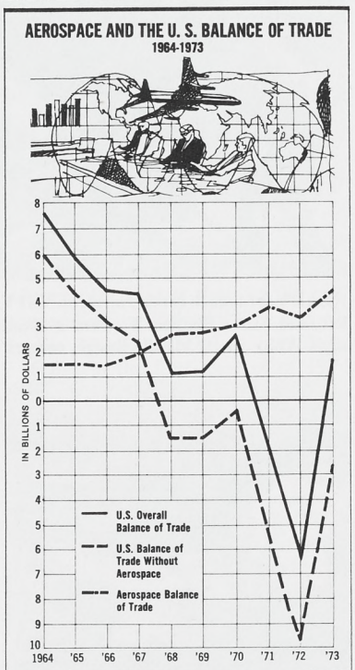
When the A-9 begins flying its new peacetime missions, it will remain a single-seat aircraft and the only changes planned by NASA are in the electrical systems for the RPRV program.



ONE OF THE two A-9 prototypes flies on its new mission at Edwards AFB.



FIRST WINNERS of cash awards in the newly initiated Employee Suggestion Award program at Northrop Pacific, Inc., a wholly owned subsidiary, are congratulated by Bill Rideout, left, factory superintendent, and John Meehan, right, manager, Quality Control, and program coordinator. Benjamin Hobbs, right center, assembler, Pylon Assembly, was the first person to submit a suggestion and received a check for $20. His suggestion dealt with the improvement of Heli-Coil installation. Harold Klaunig, leadman, Tank Assembly, was a $50 winner for his idea "Tube Bending Compound for Forming."



A favorable balance of trade with other nations is essential to the economic well-being of the United States. Conversely, a deficit balance of trade is not economically tolerable for any lengthy period of time.

In calendar years 1971 and 1972 the United States imported more than it exported. Last year (1973) the U.S. registered a plus balance of $1.6 billion.

Our trade position depends to a great extent upon our exporting success in a few major areas — agriculture, pharmaceuticals, electronics, and particularly on new and more sophisticated high technology products, such as aircraft and space vehicles, including working satellites.

Actually, without the contribution of the high technology aerospace industry the nation would have had a deficit balance of foreign trade every year from 1968 through 1973.

Students Attend Annual Symposium

High school science students from throughout the southland were the guests of the California Museum of Science and Industry and Northrop May 9 for the second annual Physical Sciences Symposium held at Exposition Park.

The day-long symposium, "Frontiers of Space - 74", featured seminars conducted by some of the most noted scientists in aerospace and concluded with a panel discussion of young scientists discussing their college experiences as science majors.

Dr. Donavan Pretzer, director of Technology, Northrop Research and Technology Center, was co-chairman of the symposium and Bob Johnson, assistant for Marketing, was symposium coordinator.

Richard F. Schneidmiller, member of Technical Staff, NRTC, presented a talk entitled, "The Scanning Electron Microscope Views the Mircro-World."

Bond Drive Under Way At All Northrop California Operations

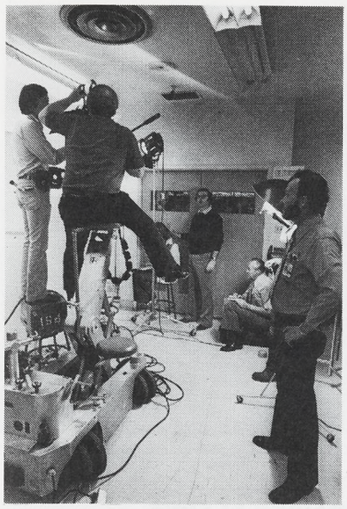
Already considered the safest possible kind of investment, U.S. Savings Bonds are now better than ever, according to R. J. "Dave" Davidson, corporate director, Administrative Services, who is heading this year's bond drive.

"We're looking for everyone to seriously consider initiating a payroll deduction plan for purchasing bonds, or to increase their deduction if they already participate," Mr. Davidson said.

He also noted that U.S. Savings Bonds now earn 6 per cent interest (4½ per cent the first year) and reach maturity within five years. Bondholders pay no state income tax on earned interest and federal tax may be deferred until the bonds are cashed or declared annually, whichever is most advantageous to the saver.

The bond drive will continue through the end of May and coordinators have been appointed at each division who will supply you with explanatory material as well as answer questions and provide application forms.

NO HOKUS POKUS about it. Your money grows like magic when you buy Savings Bonds via the payroll deduction plan, according to Lola Zitnik from the Electro-Mechanical Division's Process Control section.



GETTING READY for filming of industrial motion picture on alcoholism is the crew shown setting up lighting at the Ventura Division. Northrop assisted in the production of the film directed by Norman Siegel and produced by IPS.

STUDYING THEIR LINES are Linda Chandler and Paul Carr, who play lead in new industrial movie dealing with alcoholism.

Counseling Program

Staff Ready to Assist Employees

The Corporate Employee Counseling Program which was established to assist employees on a confidential basis with alcohol and other drug dependency problems is well under way throughout the Southern California operations with members of the counseling staff participating in community as well as in-plant programs.

Duncan Thomas, corporate employee counselor, conducted a series of talks with the executive councils of the Ventura and Electronics Divisions, and the management council of the Aircraft Division dealing with the need for management training and appropriate knowledge of the new employee benefit service.

Program and Policy

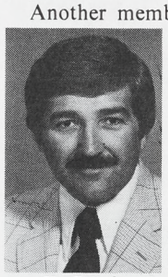
Mr. Thomas also participated in the annual meeting of the Association of Labor-Management Administrators and Consultants on Alcoholism where he discussed Northrop's policy and program in this field. He also presented a movie about alcoholism in industry which was filmed on location at the Ventura Division by the IPS Film Co. The counseling staff assisted writer/director Norman Siegel in preparing the film which deals with the problem of early identification and treatment of the alcoholic employee and focuses on an executive secretary, portrayed by Linda Chandler, and how alcohol affects her job performance and life. Noted actors Joseph Campanella and Paul Carr play leading roles.

"The manager is the key to the success of our program here," explains Dr. R. J. Krebsbach, corporate medical director. "All management personnel must be informed and trained in using deteriorating job performance as a guide in referring the problem employees. A manager's guide outlining the program has been prepared and is now available. Any questions managers may have prior to participating in the training program now under way are urged to contact corporate Employee Counseling on ext. 4984.

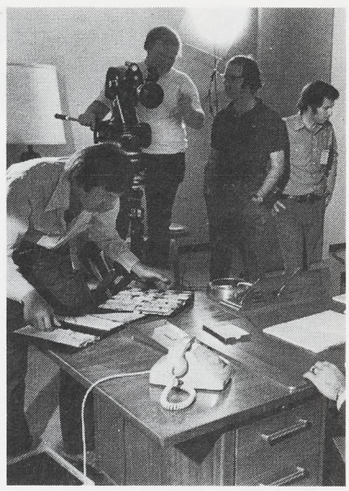
"I am very proud of the counseling staff and job it is doing to train managerial-level personnel and for the contributions they are making to community organizations in their drive to implement similar programs."

Dr. Krebsbach noted that some employees may still be hesitant in seeking assistance from the counseling staff fearing upper management reprimand.

Another member of the counseling staff participating in community programs on alcoholism and other drug related problems is Ed Furtado, corporate employee counselor, who addressed an industrial seminar in Tucson sponsored by the Alcoholism Council of Southern Arizona. Mr. Furtado was invited to address the graduate students in alcohol studies at the University of Arizona, the only institution in the nation offering a master's degree in the field. His talks centered around the aspects of Northrop's counseling program as well as offering his own expertise on the subject as Mr. Furtado himself is a recovered alcoholic.



Mr. Furtado



ORGANIZED CHAOS is what it appeared when a motion picture crew took over part of the Administration Building fourth floor at the Ventura Division. The crew was shooting a new industrial film dealing with alcoholism.

TURN YOUR HEAD this way says director as Linda Chandler responds to command during filming of motion picture.

Japanese Village Coupons Available

Northrop Family Fun Days at Japanese Village, Buena Park, is scheduled for the weekend of June 1-2 and guarantees an entertainment treat for the whole family.

From exciting karate demonstrations and wild tiger acts, to the children's petting zoo complete with giant Imperial Koi carp, sea lions, dolphins, deer, bears, vibrantly-colored peacocks, Japanese Village has something for everyone set amid magnificent Japanese architecture and intricate garden settings.

Personnel Activities now has coupons for special discount ticket prices for employees good for either day with adults $3, and children (4-11 years old) just $1.40.

AN affectionate hug from a young visitor has this doe grinning and you will too when you bring your children to Japanese Village and see the many varieties of animals, including over 200 deer, the weekend of June 1-2 during Northrop Family Fun Days.

Calculators Offered At A Discount Basis

The corporate Purchasing office has made arrangements with Olympic Sales Company, Inc., 216 S. Oxford Ave., Los Angeles, CA 90004, (213) 381-3911, for the purchase of Hewlett-Packard calculators at a discount basis by employees of Northrop divisions and subsidiaries.

California employees, upon presentation of identification, may buy the units at the Olympic Sales office. Northrop employees outside of the Los Angeles area may write to Olympic for price and ordering information, and buy by mail.

Other questions should be directed to corporate Purchasing Administration, Organization 124, Century City, ext. 245.

North African Cities Not Like The Movies Portrayed At All

Movies about wickedness and spies in North African cities like Casablanca, Algiers and Tangier make Elias Benudiz laugh.

"Humphrey Bogart and others were fine actors, but it wasn't like the movies at all," he said.

And he should know. He was chief inspector of the International Police Force in Tangier for 10 years.

He was also secretary of the Police Court and instructor in the Police School. In order to do his police work in the cosmopolitan city he had to speak Spanish, French, Arabic and English.

"Tangier was a Babylon as far as the number of tongues were concerned," he recalled, "but no more wicked than the average city."

'City of Smugglers'

He cited the stories about Tangier being a "city of smugglers."

"Immediately after World War II, Tangier — as a free port — imported huge amounts of American cigarettes and other items in short supply in Europe. European owners of small boats would cross the Mediterranean and buy these items in Tangier in perfectly legal transactions and then try to smuggle them into their own countries to avoid exorbitant tariffs.

"When they were caught newspaper stories told about the 'wicked' city of Tangier being a hotbed of smugglers. Actually it was their own people."

As for the mysterious spies who supposedly jammed the city during and after the war, he admitted that there were lots of them. "But the men did not look like Humphrey Bogart or Sidney Greenstreet or Peter Lorre. Nor did the women turn out to be exotic beauties," he said.

He said the average spy was a poor man struggling to make a living. A cafe in Tangier was a special hangout for them during the war. They were all small-timers who made a business of selling to both sides. Often they exchanged information with each other and when they couldn't find information, they made it up.

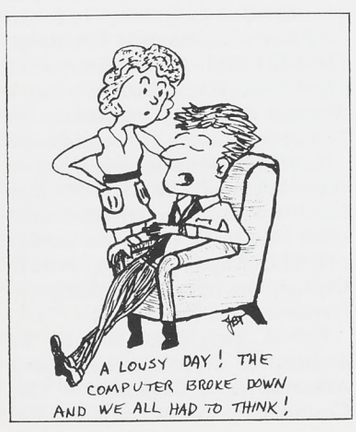
Tangier an independent international city, was occupied by Spain during World War II and spying was not against any local law. At the end of the war, Spain was forced to evacuate the city and took their police, leaving the city without police protection.

During a meeting in Paris of the "Big 4" (United States, England, France and Russia), it was decided that Belgium, who had a model police force, would train the new police for Tangier. Belgian professionals were sent and took care of the training.

In 1957, after 10 years with the police, he decided to immigrate to the United States. "It was hard at first," he recalled, "getting by with a family of six children, but I managed and I've never regretted making the move."

Today he is chief inspector of Quality Control for Northrop Architectural Systems in the City of Industry.

ELIAS BENUDIZ



Northrop Credit Union Elects New Officers

The board of directors of the Northrop Credit Union, Hawthorne, elected the following individuals to serve as indicated for 1974: B. M. Slotnick, president; W. H. Waysman, vice president; M. B. Delaney, secretary-treasurer; H. L. Cook, L. L. Cripe, R. D. Hampton, R. A. Lindsey, J. J. Richardson, and R. M. Shave, directors.

HAWAIIAN TOUR

There will be a meeting of persons interested in the NRC Hawaiian Polynesian tour departing Sept. 9, on June 6, beginning at 7:30 p.m. at the Alondra Club, Lawndale.

PAT McCleary displays some of his prized orchids which he raises in greenhouse he constructed at his Cerritos residence.

NOW MC CLEARY RAISES PLANTS

Gift of Orchids Leads to Hobby

How does a person get interested in raising orchids for a hobby? If you ask Pat McCleary, Quality Assurance representative, Electronics Division, Palos Verdes, he will tell you he got started by repairing televisions.

As Pat recalls, "I used to tinker with televisions and radios as a hobby and had repaired my friend Jim Miyahara's (also of the Electronics Division) television. He insisted on giving me something for my efforts and consequently gave me two orchid plants. To keep them alive I had to construct a makeshift greenhouse and as time progressed I found myself captivated by their beauty and eventually began concentrating on raising orchids."

That was in 1959, Pat has since raised over 3000 orchids and has gathered them from every tropic region of the world including South America, South Africa, and Southeast Asia including Vietnam.

Pat's main interest in the orchid family is with the hybrid cattleya and up until last year raised them only for his own enjoyment and for giving to friends. But a friend in the Orange County Orchid Society, of which Pat is a member, persuaded him to enter an orchid show and when it was over, his two entries had taken first and second place.

When he isn't "lost" in his greenhouse at his Cerritos residence, Pat is busy with his pedigree collies which he raises for show.

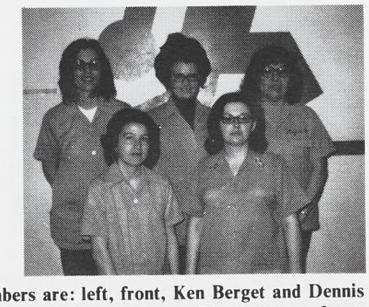
Pat has likewise become adept in constructing greenhouses. He prefers fiberglass panels to glass and uses redwood for the framework topped by a layer of saran which permits just the proper amount of light to enter while providing adequate shade.

A man of many interests, Pat still manages to tinker with televisions.

Northrop Dakota Team Ends Season

Men's and women's teams have completed play in industrial bowling leagues at New Town, and Northrop Dakota, Inc. has held its own, according to recreation correspondent Roger Frye.

The Men's bowling team finished second in the New Town Title Bowling League behind Stephens Lumber. The ladies however, had to settle for fifth place in the six-team Hi-Hatters League. Roger also noted that the NDI basketball squad completed its season with a 7-9 record for fourth place in the North Shores Conference.



NORTHROP Dakota bowling team members are: left, front, Ken Berget and Dennis Rowe. Back, Harris Berg, Dennis Markwardt, and Roger Frye. Right picture, front, Marie Frye and Connie Sauter. Back, Pat Markwardt, Barbara Folven, and Mary Yellow Robe.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is Monday of the week preceding publication.

Vehicles For Sale

Triumph TR-4, wire whls., o/drive, reblt. eng. $450. 714-871-3748.

MG Midget, 1972, 8,000 mi., AM/FM radio stereo, avail. 5/25, $2295. 213-836-3287.

Chrysler, 1969 New Yorker, 4-dr. sedan, a/c, full power equip., $1200. 714-968-7987.

Motorcycle, 1974 Yamaha, street, $795. 213-375-5360.

Motorcycle, 1966 Honda S90, $75. 213-831-6567.

Pickup, 1961 Chev. ½-ton, new 348 c.i. eng., air, shell camper, $1250. 213-371-3769.

Chevrolet, 1970 Caprice 4-dr. h/top, $1650. 213-887-1947.

Capri, 1971, 21,000 mi., 2000 c.c., auto., custom, a/c, $2675. 213-670-5084.

Buick, 1965 Electra 225 2-dr., full power, h/r, a/c, $550. 213-838-5967.

Volkswagen, 1972, 18,000 mi., $2100. 213-384-9342.

Volkswagen, 1960 Baja Bug fiberglass fenders, street legal, $350. 213-326-9156.

Datsun, 1973 240Z, less than 3000 mi., fully equipped, $5500. 213-672-3583.

Karmann Ghia, 1968, $995. 213-632-0944.

Buick, 1973 Regal, p/s, pwr. d/brks., a/c, 27,000 mi., $3000. 213-545-4403.

Off-Road Vehicle, ATV, lightwgt. 4-whl. 2-pass., 7 h.p., extra whls. & trailer avail., $250. 213-375-8536.

Dodge, 1970 Polara, 4 dr. h/top, full power, air, $875. 213-325-6546.

Javelin, 1973, a/c, lug. rack, AM-FM radio, $3000. 213-860-8266.

On/Off road VW special, st. legal, tube & sheet, 1600 eng., bus transaxle, dual tanks, $700. 213-353-0797.

Sports Commuter GT fibreglass coupe, 1974 VW power, mag whls., all extras, $2800. 213-376-4684.

Toyota, 1973 Corona 4-dr., auto., air, AM-FM, $2975. 213-375-8643.

Motorcycle, 1972 Suzuki 185, dirt type, have st. equip., $450. 213-371-4237.

Volkswagen, 1973 mod. 412, 2-dr., 4-spd., AM-FM, $3300. 213-820-1093.

Miscellaneous For Sale

Diamond Ring, ladies' heirloom, 80/100 ct. solitaire in platinum setting w/16 small diamonds, replacement value over $1200, $975. 213-644-4638.

TV, M.G.A. color, 19", portable, $70. 213-483-6789.

Record Player, Panasonic, 3-spd., $35. 213-372-7781.

Washer, Dryer, portable coppertone, used 1 yr., $50. 213-530-1252.

Crib, Simmons, mattress, $25. 213-374-4703.

Accordion, 120 bass, Milton Mann type, case, music stand, $150. 714-537-5921.

Deep Freezer, chest-type, $50. 213-328-3182.

Chair, Niagara vibrator, $70. 213-378-2609.

Typewriter, Brother's elec., portable, $80. 213-679-4023.

Washer & dryer, 1973, Kenmore, used 6 mos., $275. 213-325-3452.

Bicycle, girl's Spyder, w/basket, $20. 213-675-8413.

Ping Pong Table, hvy. top, near new, $25. 213-944-7666.

Cemetery Lot, dble. internment, Inglewood Park, El Portal Sec., $740. 714-839-0442.

Bicycle, girls's 20" Schwinn, $15. 213-831-0930.

Hasselblad System, pkg. only, $1250. 213-835-3869.

Wheelchair, Arrow, adjusts to full recline, folds for transport, $85. 213-677-3788.

Pool, Doughboy, 18' dia., 4' dp., incl. filter, pump, sweeper, $175. 213-320-0255.

Air Conditioner, Ford Philco 12000 b.t.u. 220 v., $80. 213-676-4973.

Camper, sleeps 4, extras, $500. 213-674-9655.

Miscellaneous For Sale

Bicycle, Nishiki International 10-spd., $35. 213-291-1647.

Guitar, dble. pick-up elec., portable amp & spkr., chord, $60. 213-675-1057.

Refrigerator, 1972 Westinghouse, 25 cu. ft., side-by-side, avocado, ice maker, $400. 213-474-8296.

Pups, German shepherd, $50. 213-323-2658.

Boat, 19' Sea Hunter, C.G. approved, 120 Merc. i/o, Wallstrong trailer, many extras, $3000. 213-371-7907.

Tires, 5 mud & snow w/whls. for Ford Bronco or light truck, L78-15, used approx. 4000 mi., $150. 213-377-5059.

TV, Packard Bell 12" color, w/stand, mahogany cabinet little over 2 yrs. old, $125. 213-322-4321.

Hi-Fi, Clairtone console, AM/FM-record player in walnut cabinet, $45. 213-375-4740.

Stereo, Pre Amp, McIntosh C-20, $50. 213-599-7009.

Couch, 14' custom sectional, orange & gold, $500. 213-679-3194.

Cocktail Ring, ladies', diamond cluster, 1.05 carats, white gold, $430. 213-372-2226.

Exercycle, $75. 213-377-5907.

Washer, Westinghouse, & 220V dryer, $250. 213-479-8477.

Pinball Machine, full size, 4 flippers, $275. 213-676-3050.

Boat, 16' Chrysler i/o w/trailer, incl. fire ext., life jackets, top, cover, anchor, $1650. 213-326-4157.

Recliner Chair, needs upholstering, $15. 213-326-6200.

Seats, Dodge Van, 2, never used, $100 ea. 213-326-8273.

Engine, Corvair Spyder, complete access. except turbocharger, $150. 213-378-4991, 213-378-3850.

Model Airplane, Sr. Falcon covered w/monocote, never flown, complete w/4-channel orbit radio, steerable nose gear, 35 Enya eng., $315. 213-772-1789.

Cat, female silver Persian, 3 yrs. old, spayed, $50. 213-644-8711, 213-973-1921.

Toilet Bowl, Sears, sandy beige, $20. 213-329-7998.

Camera, unused, Yashica Electro 35, $130. 213-884-9465.

Pups, champ stk., AKC reg., Shih Tzu, $150. 714-826-8998.

Mobile Home, furn., 24' x 52' on lge. lot in Frazier Park, 2-bdrm., 2 bath, all utils., $19,800. 213-373-2687.

Coffee Table, end tables, $35. 213-675-4725.

Hi-Fi Components, AM-FM radio, amplifier Lansing Garrard record player & spkr., $185. 213-324-8853.

Dishwasher, Kenmore, convt., harvest gold, 1 yr. old, $195. 213-641-6419.

Bicycle, girl's Schwinn Stingray, $25. 714-635-2539.

Dresser, wood 5-drwr., 49" h. 31" w., 17" d., $15. 213-677-7421.

Washer, dryer, Kenmore, $225. 213-833-7819.

Engine, 3½ h.p. Sears outbd., w/2½ gal. remote tank & quick disconnect, $75. 213-547-4062.

Couch, 8', matching chr., vinyl w/slipcovers, $25. 213-675-6449.

Drum set, Sears, $170. 213-325-8932.

Engine, 396 C.I.D. 1956 Lincoln, 100 mi. since complete o/haul, access. & trans. avail., $100. 213-676-3095.

Beds, twin, mattresses, box springs, maple, night stand, $50. 213-375-5372.

TV, 9" b/w portable, Sears, $45. 213-379-6124.

Tires, 4 Firestone Delux Champion 6.45 x 14, $12. 213-534-4068.

Rubber Raft, 5-man, used once, use w/small o/b motor, $50. 213-348-1087.

Outboard Motor, 1970 Chrysler, 45 h.p. elec. start w/alternator, $450. 213-644-2009.

Trailer, comb. camping & utility, 6'x8', $125. 714-539-5812.

Wanted To Buy

WWII German Daggers, pay $25-$1000, & any German or Japanese WWII military souvenirs. 213-375-4312.

Camera, any straight 8 mm, at least 5-pwr. zoom w/blt in lightmeter, good condition for good price. 213-376-8502.

Many Miles, Countries, A Son Later, Sniegowskis Reminisce

When Dan Sniegowski, master planner, Aircraft Division, and his wife Jennie celebrated their son's first birthday in March they couldn't help but reminisce over the unusual events surrounding his birth.

The Sniegowskis had planned a trip to Europe and North Africa three years in advance, setting up a route that would take them into Western and Eastern Europe, part of North Africa and Turkey, all by car.

Ten months after their trip began, their son Brian joined them while they were in Geneva, Switzerland.

Departing the U.S. in June 1972, the Sniegowskis flew to London and then Hanover, Germany, where they picked up a new Volkswagen campmobile ordered in advance.

For the first four weeks they drove through northern Germany and the Scandinavian countries visiting twelfth century stone churches.

From Finland they crossed into the Soviet Union having secured permission in advance for a two-week stay. They visited Novgorod, Leningrad, Moscow and Kiev.

Poland and Czechoslovakia were the next stops for Dan and Jennie as they stayed in campgrounds or farmer's yards whenever the invitation was extended.

Returning to Germany, the travelers visited Munich and got a doctor's confirmation of the pregnancy. Then it was down south through Germany, Austria, Hungary, Romania, and Bulgaria, enjoying the cultures and traditions of the people as well as the scenery.

Entering Istanbul, Turkey, they were awestruck by the elaborate architecture of the Moslem culture and in particular the mosque in Istanbul which is now St. Sophia Cathedral.

Following the Mediterranean Sea, the travelers visited Greece, Yugoslavia and Italy before crossing by ferry to Sicily, and then by ferry again to the North African port of Tunis.

Driving through the interior of Tunisia they headed along the coast across Algeria arriving in Morocco. "The open air markets we visited were really fascinating, in particular the camel and spice markets," Dan recalled.

Christmas in Morocco

After three weeks in Morocco, including the Christmas holidays, they re-crossed the Mediterranean and proceeded north from Gibraltar to Lisbon.

Crossing the Pyrenees into France, Dan and Jennie stayed as much as possible in the smaller towns so they could enjoy the real French culture.

Nine and a half months after their trip began, the Sniegowskis arrived in Geneva and 10 days later, Brian was born. "The little VW really got crowded then," Dan said.

Twenty-five thousand miles, 27 countries, and over 1600 color slides later, the Sniegowskis returned home in July 1973.

"Someday we would like to make the trip again. It was really worth all the time and expense it took to make it a reality," Dan concluded.

Wanted To Buy

Signal Generator, audio. 213-831-5304.

Pool Filter for 15' Doughboy type, above ground. 213-691-8181.

Mattress or pad, latex, foam rubber, twin size. 213-679-6982.

Bicycle, 3-spd. girl's 26", in good condition. 213-376-7023, 213-376-9600.

For Sale or Trade

Travel Trailer, 17' self-contained, sleeps 6, trade for sailboat. 213-378-7846.

Rentals Wanted

Engineer will share $200,000 Palos Verdes home, $200 mo. 213-541-3844.

Share apt., have furniture, prefer woman between 50 - 60 yrs. old. 213-672-6345.

Young couple, furn. house, 1 or 2 bdrm., w/garage, no child, or pets, Aircraft Div. vicinity preferred, references avail. 213-973-4636.

Lost

Wristwatch, man's, gold, initials "WWN" at Beverly Hilton YF-17 reception, Apr. 3, 213-276-0716.

Personals

My sincere appreciation & thanks to all of you for the lovely party & gifts on my retirement. PETIE STOCKWELL.

Retired person wanted as live-in companion for woman in the Hawthorne area. 213-675-0966.

Riders wanted, 7 a.m. - 3:42 p.m., Huntington Beach, Aircraft ext. 2905, 714-531-8845.

Sincere thanks to my dear friends & co-workers for the lovely gifts, luncheon & retirement party. I will miss you all. RHODA GOWANS.

Many thanks to all of you for the telephone calls & cards during my recent illness. GERRY KNOX.

Mr. & Mrs. D. J. McLarty wish to thank their many Northrop friends for the beautiful flowers & condolences on the death of their daughter, Connie.

Thanks to everyone for their kindness during my years at Northrop & the nice farewell. JOE WILSON.

Ride wanted, 8 a.m. - 4:42 p.m., Crescent & Knott Ave., Buena Pk., to Aircraft Div., ext. 1062, 714-995-3767.

We would like to express our appreciation to our many friends at Northrop for their thoughtfulness during the illness of our wife & mother. HUGH PURTELL & FAMILY.

NORTHROP NEWS

Vol. 32 **No. 5**

Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions: Park Irvine, Ventura Division; Peter Goodall, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher. Correspondent, Northrop Hueneme, and editor, Spanish language edition: Joe Anguiano.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

Derby Day Won By Jim Patelli

Guest fisherman Jim Patelli landed a 29-pound rock cod to win the Derby Day held Apr. 20-21 sponsored by the Northrop Sea Anglers Deep Sea Fishing Club, according to Mel Parrish, commissioner.

Jim was onboard the Agitator owned by Bill MacCorkell, Tactical Avionics Department, Palos Verdes, when he caught the big fish and was awarded the $35 gift certificate for first place. Mike Murphy, Bob Koerner, Chuck Fuller, and Don Caughlin, finished behind Jim for prize honors.

The next Derby Day will be the weekend of May 18-19 and interested persons may contact Mel Parrish on ext. 606, Palos Verdes, or through Personnel Activities.

JIM Patelli displays 29-pound rock cod.

BUY U.S. SAVINGS BONDS

NRC SLOW-PITCH LEAGUE STANDINGS AS OF MAY 1

	Won	Lost
Rats	2	0
Raiders	1	0
F-Troop	1	0
Three Bs	1	1
Odd Bunch	1	1
Broncos	1	1
Rogues	1	1
Roadrunners	0	2
Spoilers	0	2

NRC Calendar . . .

Northrop's first family weekend at Marineland of the Pacific is set for July 27-28 with special discount prices for employees. Continuous live shows featuring the talents of Orky and Corky, the killer whales, and many other marine animals, as well as the free Sky Tower ride that takes you 344 feet above the ocean, are only a few of the attractions the ocean wonderland has to offer. Watch bulletin boards for ticket information.

* * *

The Northrop Family Picnic is scheduled for Sunday, Aug. 25, at the Pomona Fairgrounds. Good old fashioned fun will be on tap so keep the date open for this big event.

* * *

The skills of division craftsmen and the work of various NRC clubs will be exhibited in November as part of the Northrop Arts and Crafts Show to be held in the NRC Clubhouse. Persons interested in exhibiting some of their handcrafted items should contact Jim Jones, Aircraft NRC vice president, ext. 1412, or Dennis Mahaney, Electronics NRC vice president, ext. 75-511.

* * *

The Ski Club will hold a camp-out/water ski outing at the Colorado River, Memorial Day weekend, May 24-27. Contact Rick Crane, ext. 6417, Mariposa, or John Rufino, ext. 541, Palos Verdes for reservation information.

* * *

Stuck for a gift idea for Father's Day? Join the Leathercraft Club and learn leathercrafting skills. Phil Schneider, Employee Relations, Electronics Division, conducts beginning classes each Tuesday and Thursday as part of the club's regular meetings. Also available are beginner kits at discount prices to employees.

* * *

First flight caches commemorating the YF-17 and F-5F first flights this year are being prepared by the Stamp Club and will be made available on a first come basis the month following each event. These and many other philatelic items are discussed at club meetings the third Monday of each month in the NRC Clubhouse.

* * *

The Retirement Club's annual reunion dinner will be held May 15 at the Western Avenue Golf Course. Featured speaker for the evening will be Don Avallon, manager, Navigation Department, Electronics Division, who will discuss the Omega Navigation System.

* * *

A limited number of tickets are available for Northrop Day at the Races at Hollywood Park June 15. Special ticket price of $6.50 includes admission, reserved clubhouse seat, and sumptuous buffet luncheon.

Safety At Home and In Sport Object of Gun Safety Course

A course on gun safety is being offered through the Electronics Division NRC to all personnel and their relatives, Saturday, May 25, in the NRC Clubhouse from 8 a.m. to 4 p.m.

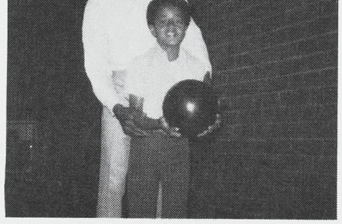
Eighteen Northrop personnel have already attended the first course which is sponsored by the National Rifle Association (NRA) and deals with the safe handling of firearms. It is now a California State law that first-time applicants for a hunting license have a certificate of completion from this course.

John Redding, Special Projects Department, Hawthorne, is the primary coordinator for having the course offered to employees and stresses that safety at home and in sport is equally important and complementary to job safety.

"Several of the attendees at that first session found that their present habits of handling firearms could result in fatal accidents and were thankful for the exposure," John said.

Two instructors conduct the one-day course and one of them is Frank Cranmer, Manufacturing unit, Palos Verdes. The other is Bob Stitchler of the NRA.

For registration information for this important course, contact John Redding, ext. 663, Hawthorne, or Gail Wise, ext. 425, Personnel Activities.



NINE-YEAR-old Dave Tobert Jr., gets pointers from Dad prior to opening play in the Juniors Mixed 4 Handicap League. Dave Sr. is secretary for the league which begins May 25 at Missile Bowl, Gardena.

Ron Huss Presents Paper at Meeting

Ron Huss, Pricing and Estimating, Hawthorne, presented a paper to the Federation of American Societies for Experimental Biology during its conference held April 8-12 in Atlantic City, N. J.

The title of Mr. Huss' paper was, "A model of NaCl and water flow through intercellular channels and tight junctions." Ron is working towards a PhD in bio-medical engineering from USC.

Supplemental Insurance Plan Offered to Employees in May

From now until May 31 is an open period for enrolling in the Supplemental Accidental Death and Dismemberment Insurance plan underwritten by Insurance Company of North America, according to Hal Janssen, manager, Division Relations and Services. This insurance is offered in addition to the coverage provided through the Prudential Insurance Company of America.

Employees are permitted to enroll to a maximum of 10 times annual salary with the following options available: Option A - provides coverage for you only; Option B - coverage for you and your spouse; Option C - coverage for you and your spouse and children; Option D - coverage for you and your children.

Schedules of coverage and weekly payroll deductions are posted on department bulletin boards and enrollment cards may be obtained from Personnel Activities, Hawthorne, or Personnel Administration, Palos Verdes. Completed cards may be returned to the Industrial Relations office or forwarded directly to the corporate Employee Insurance Benefits office, Orgn. 134, Zone 10.

PATH

(**Continued from page 1**)

and reliably in repeated passes during its portion of the test."

In the course of the Army/Navy flight test program through the end of this month, the system's guidance signal characteristics will be monitored and compared with competing systems aboard the instrumented test helicopter.

Gordon Singleton, engineering specialist and member of the original design team at Palos Verdes, is supporting the flight tests at the Naval Air Development Center.

Upon completion of the tests and evaluation by the Army, the next phase will be the development of an operating brassboard of the complete PATH system prior to production design.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 32, No. 6 | June 1974

W. C. Solberg to Head Defense Systems Dept.

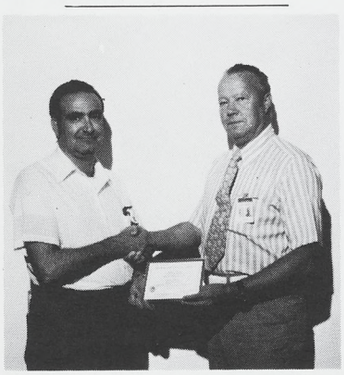
Wallace C. Solberg has been appointed vice president and general manager of the Defense Systems Division of Hallicrafters, according to an announcement by David N. Ferguson, corporate vice president and general manager, Electronics Division. Solberg will report to Ferguson.

Since joining the company in 1959, Solberg has held management positions in Marketing, Business Administration, and Program Management, and was most recently manager of the Engineering Department.

Mr. Solberg

Solberg holds a bachelor of science degree in mechanical engineering from Northwestern University.

The Defense Systems Division is engaged in several electronic countermeasures systems research, development, and production programs, including those for the F-15 air superiority fighter, B-1 strategic bomber, F-4 fighter/bomber, and the B-52 bomber.



TONY Musuraca, left, accepts certificate from Supervisor Ross Rogers, indicating his membership in the Wise Owl Club of America, an organization made up of persons who have been involved in potentially blinding on-the-job accidents. Tony was splashed in the face with molten solder and avoided being blinded due to the fact he was wearing safety glasses.

NORTHROP test pilot Hank Chouteau lifts off runway at Edwards AFB for first flight of YF-17 Sunday, June 9. See page 2 for pictures and story of YF-17's first week of flying.

Machinist Bill Brenton Marks 30th Anniversary

Twenty-eight employees are observing service anniversaries during June throughout the Electronics Division and Bill Brenton, foreman, Machine Shop, Hawthorne, heads up the list as he celebrates his 30th service anniversary with Northrop.

Brenton began his career in 1944 as a machine helper in the former Department 47 of Turbodine Corp., which later was acquired by Northrop Aircraft, Inc. The shop was involved in the manufacture of gas combustion turbine engines.

Bill Brenton

From there, Brenton was a plate pattern maker, general machinist, and leadman, prior to joining the Nortronics Department when it was formed in 1957.

Observing 25-year service anniversaries are A. E. Lysik, Product Design unit, Palos Verdes; B. R. Lind, Configuration Management unit, Hawthorne; T. E. Amundson, Environmental Test unit, Hawthorne; and D. B. Jenkins, Materiel group, Hawthorne.

Others observing service anniversaries are: R. J. Calof, Palos Verdes; H. E. Wedel, M. A. Reese, A. G. Taie, E. W. Bright, and H. A. Anderson, all of Hawthorne. 15 years — P. G. Katzaroff and Alfred Prince, Hawthorne. 10 years — G. W. Roe, Hawthorne. 5 years — M. A. Boudreau, Berkeley Scientific Laboratories (Torrance); H. L. Edwards, G. J. Bobay, G. N. Haas, G. G. Brohaugh, Roland Thayer, J. H. Mader, D. L. Hatfield, D. A. Claxton, Gail Wise, and H. W. Walshe, all of Hawthorne; A. L. Fitch, J. R. Hale, and M. J. Parrish, Palos Verdes.

BSL Torrance Hosts Students

Night school students of an accounting and bookkeeping class were guests of the Business Data Systems Division, Torrance, of Berkeley Scientific Laboratories, Inc., a wholly owned subsidiary.

The class, headed by instructor Richard Drake, is part of the Centinela Valley Union High School District Adult School program and was invited to view the manufacture and operation processes of computer systems to help the students understand some segments of data processing which they encounter in the course curriculum.

Ralph Pearson, manager, Marketing, coordinated the visit and conducted the tour which included a demonstration of the BDS 2000 system by Aaron Welkowsky, manager, Systems Applications.

Navy Will Test Omega System In F-4 Aircraft

Under a contract let by the Naval Air Test Center, Patuxent River, Md., and sponsored by the U. S. Naval Air Systems Command, the Electronics Division will test the applicability of the Omega Navigation System to small tactical aircraft during flight tests at the test center beginning in July.

According to Bill Jackson, Marketing representative for the program, "The application of the Northrop Omega system to tactical aircraft could open an entire new approach to navigation system design for use in tactical weapons system."

Selected for the test is a Navy F-4B fighter which will offer Omega a chance to perform in a supersonic and subsonic environment. It will be equipped with the Omega AN/ARN-99(V)2 system and will be supported by Bob Sanders, program manager, and Ray Latchford, project engineer.

Disneyland's Chief Engineer to Speak

Management Club members will get a firsthand look into "What Makes Disneyland Tick" from a man who should know, William Beeler, the chief engineer of Disneyland, at the club meeting tonight beginning with social hour at 5:30 p.m. at Lococo's in Manhattan Beach.

ACCOUNTING student Sandra Hendrickson poses a question to Aaron Welkowsky, manager, System Applications, following demonstration of BDS 2000 to visiting Centinela Valley Union High School District Adult School class.

FLIES SUPERSONIC ON SECOND FLIGHT

YF-17 First Flight Leads to Week-Long Significant Events

The United States Air Force-Northrop YF-17 prototype aircraft, which could be the forerunner of a new generation of high performance, low cost air combat fighters, made its first flight Sunday, June 9.

During the 61 minute flight, Chief Test Pilot Hank Chouteau reached an altitude of 18,000 feet and a speed of 610 miles per hour, thus clearing the aircraft for future flights at higher altitudes and speeds, and for air combat maneuvering. The YF-17 is powered by twin General Electric YJ101 turbojet engines and has a top speed of 1500 miles per hour (Mach 2).

Following the flight, Chouteau remarked, "When our designers said that in the YF-17 they were going to give the airplane back to the pilot, they meant it. It's a fighter pilot's fighter."

Just two days later, the YF-17 on its second flight, proved that it can fly at supersonic speed without afterburner, as Chouteau pushed the sleek fighter through Mach 1 at 30,000 feet — the first time this had been accomplished by a U.S.-built airplane.

Chouteau

"It has been my pleasure to participate in other first flights of new Northrop aircraft, the most recent the F-5E, but it is my feeling that the YF-17 first flight series has been the best of any previous effort," Chouteau said. "The engineering, manufacturing and crew personnel have my personal thanks and gratitude for an excellent display of effort. We have a fine aircraft which is reflective of the professional competence and personal integrity of those involved."

Power on one of the twin turbojet engines was pulled back as Chouteau performed a simulated single-engine approach as part of the normal flight evaluation of the aircraft. The 45-minute flight also included operation at supersonic speeds with afterburners.

Following its third flight in which stability and control tests were performed at 25,000 and 35,000 feet, the futuristic YF-17 was flown by Lt. Colonel Jim Rider who will head the joint flight test team of U.S. Air Force and Northrop test pilots during the year-long evaluation.

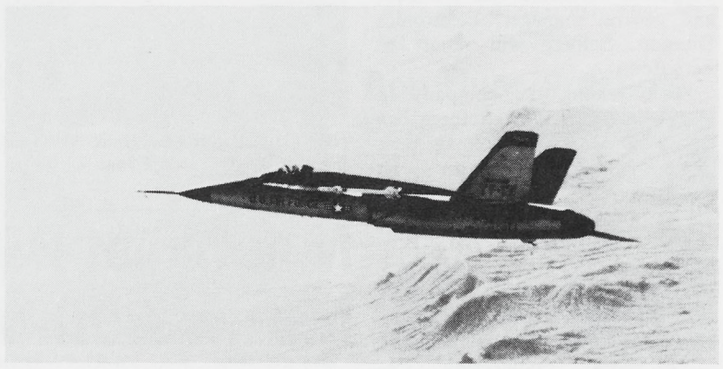
Colonel Rider's flight, longest of the series at 72 minutes, was the first USAF pilot checkout flight. He later remarked, "It was a super flight overall and I thoroughly enjoyed it. The flight controls were fine, the engines very responsive and overall, the aircraft handled very well.

"Visibility over nose, side and aft was excellent and it had excellent lateral, directional, and longitudinal controllability. All in all, the flight went exactly as planned and briefed — extremely well. Flies better than the F-4 and the Northrop simulator," he said.

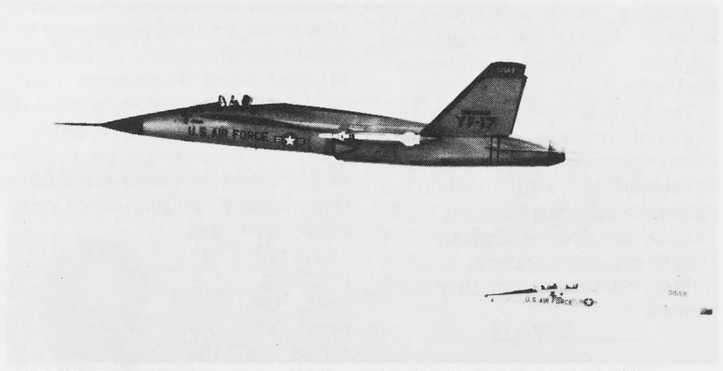
Since it is based on an advanced design for a versatile air superiority fighter, the YF-17 weighs 23,500 pounds, about half the weight of current operational fighters, and is built to take advantage of new weapons and avionics, although for the flight test program, it is equipped only with a gun, two air-to-air missiles and limited electronics.

The YF-17 design has been drawn from eight years of Northrop work aimed at the development of a new tactical fighter weapon system that would, among various missions, provide air supremacy against any aircraft it might encounter during the 1980-2000 time period.

CROWD cheers the pilot and the YF-17 as they take off on the aircraft's first flight.



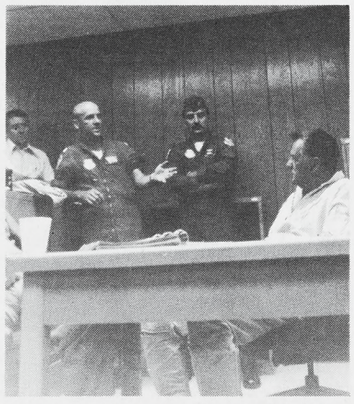
YF-17 prototype aircraft on its maiden flight over Edwards AFB.



THE YF-17 prototype is accompanied by another Northrop aircraft, the T-38.

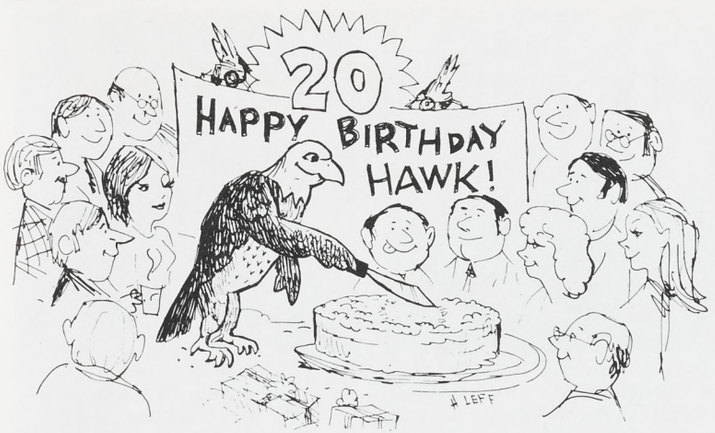
INTENSE crowd watches the YF-17 as it maneuvers in the sky. The YF-17 reached a speed of 610 miles per hour.

CHOUTEAU's daughters and granddaughter came to see their favorite pilot in a new airplane.



SERIOUS discussion at the debriefing with the Air Force and the pilot after the flight. The flight lasted 61 minutes.

PILOT Chouteau and President Thomas V. Jones talk about the successful first flight of the YF-17.



Electro-Mechanical Division Observes Twentieth Anniversary Of First HAWK Missile Contract

Twenty years ago this month Raytheon Company, who had been awarded a U.S. Army contract to design and develop a new ground-to-air defense missile, enlisted Northrop's expertise in missile airframe structures and design of supporting launchers and loaders.

This was Northrop's beginning with HAWK, one of the most successful and long-lived programs in the company's history.

Today, on the 20th anniversary of the first HAWK contract, Northrop's Electro-Mechanical Division is still producing components for HAWK. And present and expected contracts will continue the work at least until 1980. Productive life of the program will then be over a quarter century.

Dollar value of the contracts has now reached $250 million and will produce an additional $100 million under present contracts.

System Updated

The HAWK system has been updated to take advantage of advancing technology, but externally today's Improved HAWK and the Basic HAWK designed in 1954-56 look alike. The loaders, launchers and actuators Northrop builds today, while modified, are essentially the ones that the company's engineers designed 20 years ago. The system is still a current defense weapon of the U.S. Army, the NATO countries, Japan, and other Free World nations.

A RAYTHEON HAWK missile is fired from a Northrop launcher at the U.S. Army's test facility at White Sands, N.M.

Northrop Aircraft Division engineers worked with Raytheon on the preliminary design of the HAWK system, evolving the configuration of the missile. Northrop's responsibility was for the structural integrity and aerodynamic performance of the missile, and design and fabrication of major portions of the airframe. The Electro-Mechanical Division had overall responsibility for Northrop's contributions to HAWK and also designed and fabricated the missile launcher, loader, pallet and reusable container for the missile.

When the manufacturing program began in late 1956 after the R&D phase was completed, the Electro-Mechanical Division began manufacturing the loaders, launchers, actuators and missile wings. These were originally done as a Raytheon subcontractor, but since 1959 the division has been a prime contractor for these components.

Adopted by NATO

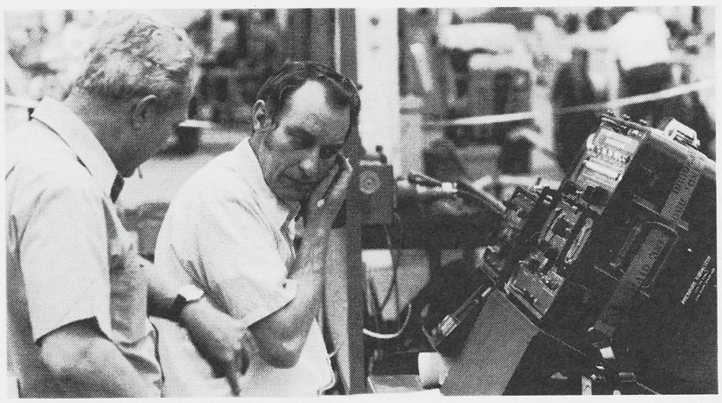
HAWK proved so successful in the United States that it was adopted by NATO countries for their own defense. Northrop's expertise brought the division an invitation to help establish the HAWK manufacturing capability in five NATO countries.

Later when Japan chose HAWK for her own defense force, Electro-Mechanical Division engineers were asked to aid in setting up the HAWK manufacturing capability in Japan.

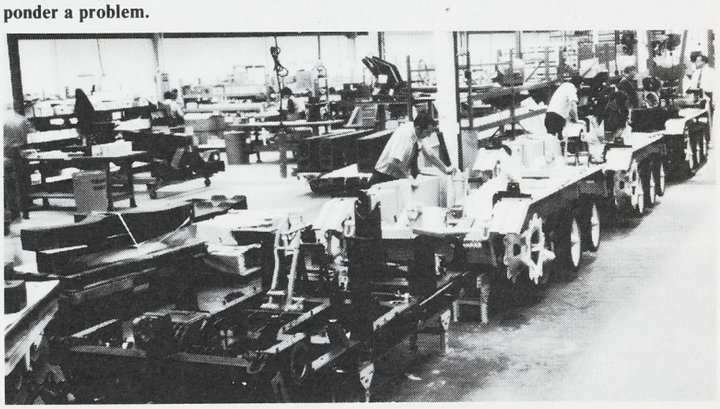
Changing defense needs have required the Electro-Mechanical Division to restart the HAWK assembly line three times. The most recent was in October 1973 when the line was reactivated to begin work on loaders and launchers for the new Improved HAWK. Although the line was halted twice, contracts for modifications, wings and actuators have kept the company working on HAWK without a break for the entire 20 years since the program began.

Up to this time Northrop has built 400 loaders, 1200 launchers, 14,000 actuators and 56,000 wings for HAWK and Improved HAWK.

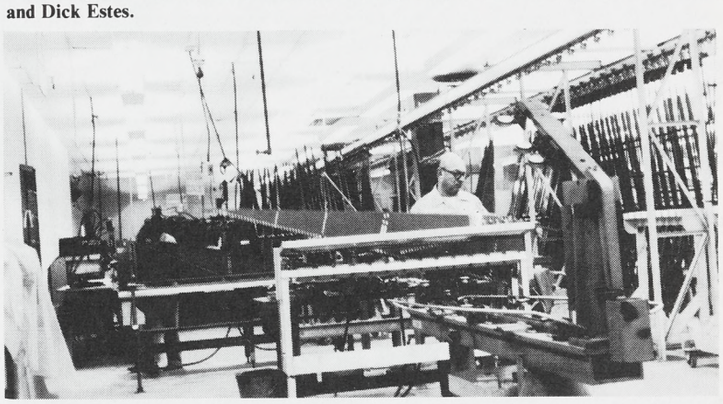
The most significant difference in Improved HAWK is that an all new missile has been developed and digital data processing of acquisition and fire control information have been added. The Improved HAWK missile is a *certified round* — that is, it is certified to be reliable for launch without field test or repair.



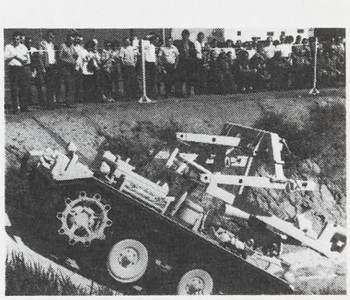
EACH UNIT built by the Electro-Mechanical Division undergoes exhaustive checks before being released to the customer. Here Earl Egler, left, and Ron Staudenmayer, ponder a problem.



HAWK LOADERS move along the assembly line at Electro-Mechanical Division's Anaheim plant. Shown at work from left are Elly Lingle, Charles Bernard, Keith Davis and Dick Estes.



AN EFFICIENT assembly line produces wings for the HAWK missile. Gordon Stinnett is shown in the foreground.



A HAWK LOADER goes through a climb test during a recent demonstration of the HAWK system to employees at Anaheim.

Electro-Mechanical Division Upgrades Optical Equipment

The Electro-Mechanical Division Optical Design and Development section is being upgraded with new optical coating equipment, according to P. H. Halderman.

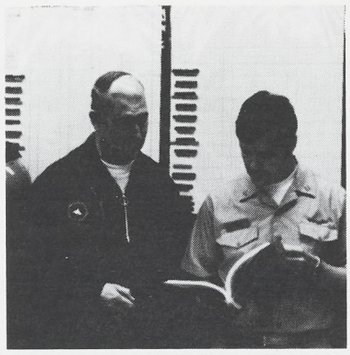
The new equipment will permit high efficiency optical coatings to be applied to optics for both existing and advanced electro-optical systems.

"The new coating equipment gives us a capability equal to any in the industry," Halderman said. "Our Optical Laboratory has a complete design and development capability. In addition, we are in a position to furnish optical fabrication back-up for production, if required. We are capable of supporting our own optical system design problems as well as those of other divisions. I feel we are unique in that we have the capability of designing, fabricating and testing the entire optical system."

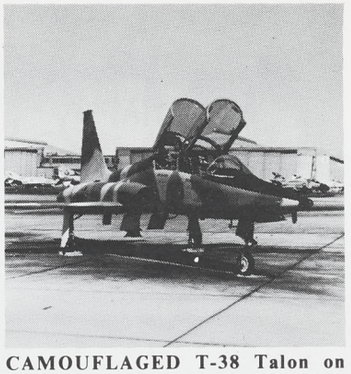
A major asset of the Optical Design and Development section, Halderman pointed out, is the depth of proven experience and the outstanding performance of its personnel. "Our people have been with us for many years and are well known in the optical community. Their experience with the company dates from the optical design for the Snark, the first stellar inertial guidance system with intercontinental capabilities; ALOTS, the airborne tracking system for space launch application; Skybolt, Mobile Medium Range Ballistic Missile (MMRBM); TISEO, the target identification system electro-optical, and TISEO outgrowths such as the Television Signal Unit for the F-14A; ISTAR for the Army's Scout helicopter; SPAL for attack helicopter applications; and other advanced electro-optical systems.

Some Examples

Some representative examples include modernization and updating of the projection system for the board of directors' presentation room, design and fabrication of the Schlieren System for boundary layer evaluation in the Aircraft Division Wind Tunnel; design and building the world's largest zoom lens for the Large Amplitude Simulator built by the Aircraft Division for NASA; optical design of the Nor Sight as used on the F-5 series aircraft, as well as optical design and analysis for the Electronics Division's Head-Up Display.



NWASI representative Dallas Tirk, left, and Top Gun instructor Lieutenant Gregg Southgate go over training schedule prior to flight. Photos and story courtesy of Talon Service News.



CAMOUFLAGED T-38 Talon on flightline at Miramar Naval Air Station, Calif. The trainer is serving as aggressor aircraft in the Top Gun Fighter Weapons School training program.

Miramar Naval Air Station Receives T-38 Talon Trainer

The United States Navy Top Gun Fighter Weapons School at Miramar Naval Air Station, Calif., is the latest recipient of the T-38 Talon supersonic trainer.

The T-38s are serving as aggressor aircraft in the school's program of providing aircrews with a complete understanding of the principles of aerial combat and the capability to employ their aircraft effectively in aerial combat.

The Top Gun Fighter Weapons School, commanded by Lt. Commander Ronald E. McKeown, was formed in September 1968 as a result of air combat operations in Southeast Asia and a thorough review of every known engagement or visual contact with aggressor aircraft. The study indicated an immediate need for advanced air combat maneuvering techniques, improved weapons systems, and better training for the aircrews in the use of these weapons systems.

Thus, a staff of highly experienced combat weapons delivery specialists have been gathered to fly the dissimilar aircraft used for the flight phase of the program consisting of about 60 air combat maneuvering attacks against fighter crew trainees. The academic phase covers 44 major subjects, ranging from weapons systems and air combat maneuvering tactics, to how to instruct upon the students' return to their parent squadrons.

The Talon was selected for the program because of its exceptional climb, turn, acceleration, supersonic speed, and maneuverability characteristics, as well as being a clean-burning aircraft difficult to distinguish visually or by radar detection.

Support

Supporting the Talons during the course of the program at Miramar are 11 Northrop Worldwide Services, Inc. (NWASI) personnel under the direction of Dallas Tirk, project manager.

NWASI personnel maintain the T-38s, performing all ground support and launch functions and are presently conducting on-the-job training for the Navy maintenance personnel.

Members of the NWASI team are, Rofe Eldridge, Mike Dillon, Mark Weiler, Ellis Lee, Jr., Orval Davis, Jim Higgins, Stephen Smith, Ray Goens, Oscar Schliem, and Rudy Corbin.

Sarann Kruse Is First Safety Technician on Distaff Side

Like a lot of women in industry, Sarann Kruse, Aircraft Division, decided to seek new opportunities within the company and aim towards a new goal. That decision has led her to become a safety technician in Industrial Safety — a job never before held by a woman at Northrop.

Last year Sarann requested a transfer from the Machine Shop office for a new job and what she hoped would be new challenges. "My job in the Machine Shop office just didn't offer the challenges that I wanted from work, so when the opportunity came for a transfer I was ready."

Paul Crews, who was at the time manager of Occupational Safety, gave Sarann a chance to try a new field when he placed her in the position of safety technician.

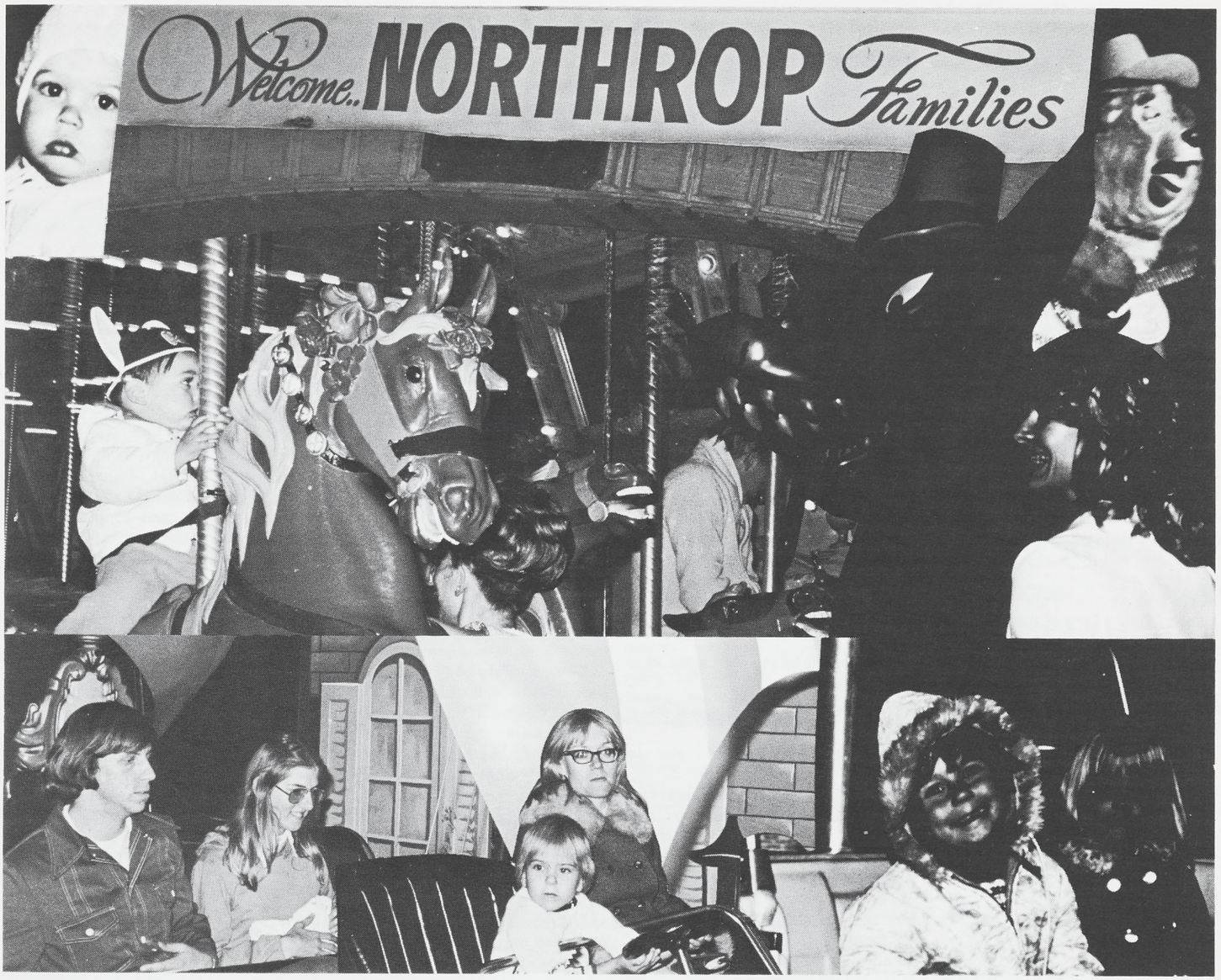
Sarann has since proven extremely qualified for the job and has no problem dealing with men on the assembly lines or in the shops during the course of her safety surveys throughout the facility, according to Al Van der Most, manager, Occupational Safety.

Having worked in the Paint and Process Shop, Quality Control, and the Machine Shop during her 13 years with Northrop, Sarann has had the opportunity to meet members of management and first line supervision and finds those acquaintances beneficial.

"When I approach a foreman and explain my job to him and that I have to assist him in identifying an unsafe condition or practice within his section, I always get complete cooperation and immediate action on the condition," she said.

Sarann has also become the first woman to conduct the safety briefings for new hire personnel in the division Training section. Her presentations include materials and visual aids she developed. "Safety orientation to new personnel is an important phase of our briefings and Sarann is a refreshing personality, very knowledgeable in safety, and is a poised, confident speaker," says Ralph Carey, Training.

SARANN Kruse briefs new hire personnel at the Aircraft Division on safety awareness on the job. Sarann is the first woman to conduct briefings.



ONCE AGAIN FAMILIES ENJOY NORTHROP FAMILY FUN NIGHT AT DISNEYLAND

Aircraft Division Reactivates New Hire Referral Award Plan

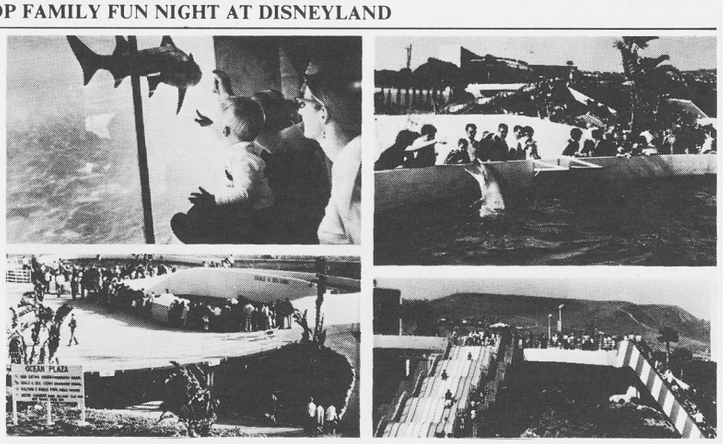
The Aircraft Division has resumed a policy used in past years for the referral of new hire personnel in hard to fill job classifications with the reactivation of the Referral Award Plan, according to John J. Richardson, manager, Industrial Relations, Aircraft Division.

Personnel throughout Northrop are requested to submit candidates for these hard to fill positions following the guidelines of the plan. If an applicant is hired by Northrop and retained for at least 90 days in one of the classifications listed, the referring employee will receive a cash award of $100.

Classifications currently needing to be filled are: jig and fixture builders; plaster pattern makers; template makers; tool designers; tool and operations planners, fabrication; tool and operations planners, assembly; form block makers; pierce and die makers; master layout man; and skin mill operator.

"Our experience in the past has shown that our own employees are the best source for qualified candidates," Richardson said. "With the current buildup in manpower within the Aircraft Division for the F-5 and 747 programs, we need to fill these positions as soon as possible."

To submit a candidate for one of the listed classifications, pickup an applicant Referral Award card from any company Employment office and have the applicant submit it when he or she initially applies for employment.

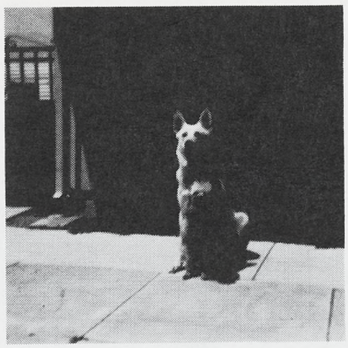


Marineland of the Pacific

Northrop's first family weekend at Marineland of the Pacific is set for July 27 and 28.

Some of Marineland's cast of star performers are Bubbles the Pilot Whale, Orky the Killer Whale, Flipper and his Dolphin friends, and every other type of aquatic animal from sharks to octopuses. There is an exciting new astro-slide for the young of any age and a free Sky Tower ride which takes you 344 feet above the ocean.

Tickets, priced at 50 cents for children, $1.75 juniors and $2.50 adults, are available at Personnel Activities. No tickets will be sold at Marineland.



SHANE, Orange County Dog of the Year, with master, Butch Boles, left, and Brett, the miniature poodle at right.

BACK FROM DOGHOUSE

Orange County Dog Of The Year

Shane has come back. Back from the doghouse that is, and not the one in which canines usually sleep.

Shane, a full-bred white German shepherd, was named Huntington Beach Dog of the Year and then Orange County Dog of the Year.

His owner, Jerry Boles, industrial planner, Aircraft Division, was notified in April that Shane had won the honors following a written plea to the mayor to reverse a city notice labeling Shane a vicious animal.

It all started when the Boles' regular postman was out for a few days and the substitute postman attempted to deliver mail in a fashion unfamiliar to Shane. "When the postman tried to enter our open garage to hand me the mail, Shane automatically held him at bay, taking a firm grip on the man's arm," Jerry recalled.

The postman filed a complaint that Shane had bit him so the city notice was issued and an additional $20 license fee was imposed on the Boles and requirement made that Shane be kept in a heavily fenced area with a sign posted, "Beware-Vicious Animal."

Jerry didn't think that was right, and wrote the mayor telling how Shane had saved the life of a youngster at the Colorado River the previous summer.

"While camping at the river, we saw this small boy on a rubber raft being swept rapidly down river towards some rough water," Jerry explained. "His father was running up and down the bank screaming for help. All of a sudden Shane jumped into the water and managed to nudge the raft ashore. He had never been trained for anything like that as we had gotten him just as a watchdog.

"He has always been kind of special since his Thanksgiving Day birth until we got him Christmas Day for our son Butch. Even our miniature poodle Brett thinks he's Shane's father."

But now Shane has shaken the vicious animal tag and is quite happily going about his business securing the house at night after everyone is asleep, and during the day, making a once around the yard on the hour.

But what more could you ask of a Dog of the Year?

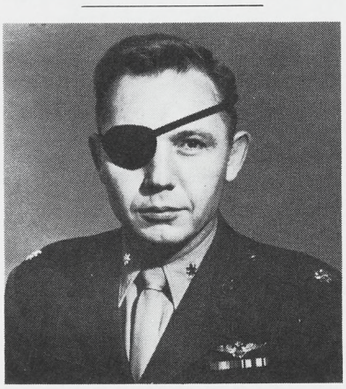
NRC Schedules European Tour

An exciting 17-day Ambassador tour of Europe is scheduled for departure Sept. 8 and returning Sept. 24 sponsored by the Northrop Recreation Club.

The fully escorted tour will visit England, Austria, Holland, Italy, Germany, Switzerland, and France all for just $976 per person.

For application form and detailed brochure, contact the Personnel Activities office in any facility. Aircraft — Cathy Paris, ext. 2486; Electronics — Jeannie Zubak, ext. 542; Ventura — ext. 435; and Electro-Mechanical — ext. 244.

A meeting of those persons interested in the Ambassador Tour will be held Thursday, June 20, beginning at 7:30 p.m. in the NRC Clubhouse, Hawthorne.



REAL $6 MILLION MAN
Colonel Bruce Peterson

NASA's Bruce Peterson: The Real $6 Million Man

By Major Jack Lewis
USMCR Information Officer

Once each week, when "The Six Million-Dollar Man" flashes onto the nation's television screens, the show opens with the spectacular crash of a space-type vehicle. The realism of this particular sequence has brought more than a few gulps of wonder, how such movie magic can be accomplished.

Actually, the crash was real. The pilot was Bruce A. Peterson, now director of Safety and Quality Assurance for NASA's Flight Research Center at Edwards AFB and a lieutenant colonel in the Marine Corps Air Reserve, assigned as commanding officer of Headquarters and Maintenance Squadron-46 of the all-Reserve Marine Aircraft Group-46, which is headquartered at El Toro Marine Corps Air Station.

Colonel Peterson, who at that time was a research pilot for the Flight Research Center, served as a model for the hero of the TV series, actor Lee Majors.

"I don't think it cost any $6 million to put me back together after that crash," admits Peterson, "but I really don't have any idea of what the total hospital bill added up to." Peterson was under treatment for well over a year, in and out of several hospitals for periods from a month to only a few days, as plastic surgeons did their work.

Rebuilt More Realistically

Admittedly he was rebuilt in a slightly more realistic fashion than that employed by script writers in the TV version.

The 1967 crash involved the experimental M2-F2 lifting body. The accident took place on May 10. The M2-F2 was rebuilt and modified into the M2-F3.

All that he remembers of the accident is "about what is seen on the TV screens every week. That particular footage was taken by the cockpit cameras. I blacked out about the same time the cameras stopped working."

Peterson was dragged from the wreckage and rushed to nearby Edwards AFB Hospital. After initial treatment, he was driven aboard a C-130 transport aircraft and was flown to the March Air Force Base Hospital.

Injuries included a fractured skull. His whole forehead had been scraped off by the rough desert sand and the rest of his face was as though "it had been sandblasted." His right eye was damaged, his teeth were badly chipped as a result of the impact and he suffered a broken hand.

At the time the Reserve officer was also assigned to a fighter squadron of the Marine Air Reserve. "I was able to work in training duty with the Marine Reserve between trips to the hospital," he recalls.

There was a problem too, in proving to NASA and the Marine Corps that he was still fit to fly. Although restricted, he continued to fly for NASA until 1971, doing test work in the F-111, the T-33 and the F-104. He carries a card to show he is considered in top physical shape by the Federal Aviation Agency.

Enlisted in 1953

Peterson enlisted as a Naval aviation cadet at Santa Ana in March 1953 and was commissioned a Marine Corps second lieutenant in November 1954. He was released from active duty in 1957 as a first lieutenant, returning to college.

In comparing the inspiration for the Six Million-Dollar Man with the actor who portrays him, it is tough to find similarities. Lee Majors was a star athlete and a member of the Kentucky All-State high school football team. He later played football at the University of Indiana and Eastern Kentucky State College, earning a degree in education. He was offered a tryout with the St. Louis Cardinals, but decided to try acting instead.

"I've been told that Majors wants to meet the man he is trying to portray on the screen," says the colonel, "and I'd like to meet him. We'll have to do that one day."

REEL $6 MILLION MAN
Actor Lee Majors

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is Monday of the week preceding publication.

Vehicles For Sale

Mustang, 1967, 51,000 mi., 289 V-8, p/s, auto., $1250. 213-670-5084.

Austin Healey, 100-4, restored, many extras, $1500. 213-328-6662.

Pickup, 1961 Corvair, '64 110 H.P. eng., 4-spd. stick, Mag whls., $600. 213-328-2648.

Torino Squire, 1968 sta. wagon, air, p/s, $775. 714-926-7679.

Jeep, 1949 M-38 Willys, reblt. eng., 4-whl, dr., $850. 213-329-4090.

Ford, 1968 9-pass. Country Squire wagon, a/c, r/h, $1200. 213-526-3683.

Dodge Dart, 1970, V-8, p/s, new brks., shocks, tires, batt., 38,000 mi., $2200. 213-675-7547.

Firebird, 1972 Esprit 350, 43,000 mi., auto. trans., p/s, a/c, p/b, AM radio, $3100. 213-423-0628.

Motorcycle, 1966 Yamaha 305 Scrambler, $125. 805-483-5644.

Mustang, 1966, a/c, w/w, r/h, auto. trans., $650. 213-378-7861.

Pickup Truck, Jeep, 1964 4-whl. dr., ¾-ton, 2 gas tanks, htr., $1495. 213-375-5078.

Corvette, 1972 Stingray, a/c, AM-FM radio, radial tires, $5095. 213-545-8756.

Motorcycle, 1972 Suzuki 380 GT, $595. 213-833-6045.

Cadillac, 1959 limo., elec. windows, radio, air, $375. 714-633-5521.

Chrysler, 1969 New Yorker, 4-dr. sedan, a/c, full pwr. equip., $1000. 714-968-7987.

Mustang, 1970 307, full power, air, $1495. 213-375-0017.

Pickup, Chevrolet, ¾, w/8' cabover camper, recently o/hauled, $1895. 213-430-3911, 714-827-9250.

Volkswagen, 1973 Model 412, 2-dr., 4-spd., new brakes, AM-FM, $3200. 213-820-1093.

MGA, 1957, 1500 rdstr., good eng. & dr. train, top, tonneau, side curtains & lug. rack, $700. 213-672-0288.

Pickup, 1967, Datsun, AM/FM radio, sprint whls., $1200. 714-821-8651.

Motorhome, 1972 Pride-N-Joy, on Dodge chassis, self-contained, sleeps 6, auto. trans., p/s, p/b, a/c, $7500. 213-679-0710.

Pinto, 1973 wagon, 12,500 mi., auto., rack, warranty, $2650. 213-375-0305.

Motorcycle, 1967 Yamaha, 100 cc, 6000 mi., $200. 213-372-6916.

Karmann Ghia, 1972, new tires, auto. stick shift, $2350. 714-826-7451.

Pickup, 1971 Ford, ¾-ton, auto. trans., p/b, a/c, r/h, $2000. 213-378-7846.

Opel Rallye, 1971 2-dr., auto., AM radio, $1700. 213-532-9827.

Olds 98, 1970, 2-dr., all power, $1975. 213-645-9598.

Volvo-544, 1964, reblt. eng., U.S. mags, wide tires, many extras, $875. 714-633-5826.

Miscellaneous For Sale

Steamer Wardrobe Trunk, has drwrs. & compartments, $100. 213-325-7806.

Typewriter, Remington, desk-type, $20. 213-530-1252.

Wedding Dress, white Jonathan Logan, $50. 714-871-3748.

TV, color, Sears portable, 1973, $200. 213-398-4324.

Guitar amp., bass, Baldwin, $80. 213-291-1647.

Golf Cart, $25. 213-943-0657.

Cemetery Lot, Glen Haven San Fernando Valley, $225. 213-644-7976.

Rug, 2 pcs., 9 x 12, $35 ea. 213-327-6918.

Coat, kid-fox, women's size 10-12, $100. 213-451-3658.

Tents, $50, other camping items. 213-644-4657.

Recorder/Player Deck, 8-track stereo, Bradford, $110. 213-673-4890.

Miscellaneous For Sale

High Chair, $5. 213-780-7476.

Pup, Doberman pinscher, AKC, females, blk. & tan, born Feb. 22, wormed & shots, $75. 213-679-8035.

Living Room Furniture, $200. 213-530-7939.

Comptometer, 12-key Victor, $50. 213-326-6456.

Dishwasher, Whirlpool supreme 400, portable, 1 yr. old, $85. 213-644-6131.

Pinball Machine, full size, electronic, $275. 213-676-3050.

Aquarium, 20 gal., all equipment, 20 fish, $60. 213-644-2579.

Mobile Home, Northern Built, 12 x 60', 6 rm., central heat & air, 3 in. insulation, dble. I beam suspension, furn., $156.03 mo. pymt., bal. approx. $9700. 213-396-5625.

Refrigerator, Sears frost free 16 cu. ft., auto. ice maker, $185. 213-370-0824.

Airplane, Interstate S.I.A. C&5. Continental, ceconite cover completely reblt., $3200. 213-679-6449.

Outboard Motor, 3½ H.P. 1972 Sears, aircooled, single cyl., $80. 213-377-9839.

Gown, never worn, azalea pink, size 5, $25. 213-675-4306.

Air Conditioner, room type, deluxe, 5-spd. plus exhaust, Montgomery Ward Frigidaire, 23,000 BTU, $250. 714-637-7662.

Sailboat, Coronado-15 for cruising or racing, complete w/trailer, $1175. 213-374-4241.

Stereo, Unisonic amp w/8 trk. player, spkrs., turntable, $50. 213-474-8296.

Sailboat, 19', dacron sails, 2 yrs. old, $300. 213-377-0720.

Crib & dresser w/pad, Jenny Linde Babyline, $100. 213-374-0118.

Dinette Set, wrought iron w/glass top, $50. 213-325-8932.

Studio Couch, sleeps 2, $35. 213-679-6982.

Wedding Dress, size 10, $35. 213-675-4725.

Dinette Set, $15. 714-847-5429.

Tires, 4 225 x 15 L-78x15 Michelin steel-belted radials, $250. 213-756-1812.

Coat, genuine leather, dk. brn. w/beige collar, belt, pockets & buttons, size 12, $50. 213-632-3045.

Desk Chair, wood frame, swivel, rollers, $30. 213-459-2462.

Bowling Ball, Brunswick, & bag, never been drilled, 14-lb. Black Diamond, $15. 714-522-2077.

One-Wheel Trailer Frame & wheel, $25. 213-422-3932.

Dishwasher, Whirlpool Supreme 400, harvest gold, 1 yr. old, $85. 714-644-6131.

Boat, 19' Sea Hunter, C.G. approved, 120 Merc. I/o Wallstrong trailer, many extras, $3000. 213-371-7907.

Carpet, used, 18' x 22', approx. 42 sq. yds., high low, beige, $85. 213-324-8853.

Passenger Seats, 2 for Dodge van, never used, $100 ea. 213-326-8273.

Stereo, Magnavox, 3-pc. portable, $40. 213-541-6463.

Pups, AKC Shelties, male & female, $100. 714-531-3110.

Sailboat, Catalina, 22', retract. keel, o/b motor, trailer & sails, $4200. 213-541-6955.

Camera, Polaroid, b&w, case & attachs., $17.50. 213-376-4831.

Travel Trailer, 16' Shasta, self-contained, $950. 213-324-5300.

Cemetery Lot, dble. internment, El Portal Sec., Inglewood Park Cemetery, $740. 714-839-0442.

Refrigerator, Frigidaire, dble. door, white, $75. 213-679-5506.

Pool Ladder & slide for Doughboy pool up to 40" depth, $15. 213-376-8502.

Refrigerator, Gibson, 57" h., 30" w., approx. 26" d., needs work, $10. 213-677-7421.

Range, gas, harvest gold, $250. 213-778-3245.

Refrigerator, bronze, 4 yrs. old, $75. 213-532-3318.

TV, 19" Zenith, table model, $20. 213-376-8255.

Boat, 327 Chev. eng., 1971, inbd., trailer, $3300. 714-535-5923, 714-956-9484.

Piano, child's, h/wood, 19" h., 17" l., 12" d., needs slight repair, bench, $10. 213-530-3521.

Record Player, Panasonic, 3-spd., walnut w/cover, never used, $35. 213-372-7781.

Bed, queen size, Sears, $100. 213-532-4122.

Miscellaneous For Sale

Telephoto Lens, Canon F.D. 200mm f4 lens, case, $110. 213-545-9996.

Dog, toy Pomeranian, AKC sable male 4 lbs., 4 yrs., $125. 213-329-2561.

Horse, bay mare, Tennessee walker & quarter, 16 hands high, trained western, $380. 213-320-8297.

Rugs, acrylic, approx. 4' x 6', gold, yellow & orange, $8 ea. 213-377-3806.

Drums, Ludwig, 2 sets of 3 Tom Toms, $100 set. 213-329-5364.

Telescope, spotting 101mm, 4" lens 15-60 pwr., tripod, all metal, $65. 213-375-7265.

Encyclopedia, 15-vol. World Book, Childcraft series, $40. 213-831-6567.

Speaker, 15" J.B. Lansing in 6' exponential folded horn walnut cabinet, $125. 213-378-2127.

Tires, 4 used F78-14, whls. & whl. covers, $50. 213-542-4952.

Overseas Trunks, 2, antiques, $50. 213-378-5344.

Rug, 12x15 nylon sculptured, $50. 213-375-5372.

Wanted To Buy

Piano, upright practice, reasonable. 213-372-2226.

Guns, used, pay cash, regardless of age or condition. 213-457-7086.

Cameras, old, classic, or unusual, for collection, & movie cameras, Bolex, 8mm lenses. 213-413-4642.

Beer Box, refrigerated, for home use that holds 1 keg of beer. 213-376-5096.

Camper Shell, cab high for Chevrolet truck, 1973, 8' bed. 213-323-9586.

For Sale or Trade

Ammo, 40 rnds. of 300 Savage, trade for 30-30 or 30-06. 213-322-5136.

Motorcycle, 1973 Harley Davidson Sportster, 5000 mi., $2450 or trade for 1969 or better Jeep International. 213-530-4841.

Mercury, 1972 Montego MX, 4-dr. sedan, 19,000 mi., $2500 or trade for sports car. 213-374-9944.

Rentals Wanted

Apt., 2 or 3 bdrm., unfurn., bltins. preferred, Hawthorne High School district, 1 adult, 3 children, no pets. 213-675-6738.

Tent-Trailer, small, for weekend. 714-837-2981.

Free

Kittens, orange & white & black & white, male & female. 213-973-5477.

Pups, mixed German shepherd/husky, born May 1. 714-897-6046.

Personals

Ride wanted, Crescent & Knott Ave., Buena Pk., 8 a.m.-4:42 p.m., Aircraft ext. 1062, 714-995-3767.

Rider wanted, San Gabriel Valley El Monte & area adjacent, 7 a.m.-3:42 p.m. Aircraft Div. ext. 2110, 213-443-1185.

Riders wanted, Los Alamitos Rossmoor area, 8 a.m.-4:42 p.m., Aircraft Div. ext. 1163, 213-430-8378.

Ride wanted, from Pacific Coast Hwy. & Artesia, 2nd shift, willing to pay, Aircraft ext. 2691, 213-379-1240.

Wish to join or start car pool, Bolsa Chica & Westminster area to Hawthorne, Aircraft ext. 2967, 714-898-1517.

Ride wanted to & from Santa Monica, Ozone & Lincoln or Marine & Lincoln Blvd., 8 a.m.-4:42 p.m., Aircraft ext. 4015, 213-396-6130.

Car Pool, Irvine area, near S.A. Fwy. & Culver Dr., to - from Electro-Mechanical Div., ext. 523, 714-522-1865.

Mr. & Mrs. Ralph Davis & family wish to thank their many Northrop friends for the beautiful flowers & condolences on the death of our son & brother, Alan.

Thanks to all the nice people at Northrop for the beautiful flowers & get well cards during my recent illness. EVELYN HUNTER.

Thanks to all who helped make my retirement dinner party such a memorable occasion & for the very nice & useful gifts. WALLACE G. JOHNSON.

My sincere thanks for all the cards & the beautiful flowers received as expression of sympathy in the passing of my father, Clair Lyon. SALLY VALENCIA.

My family joins me in extending our most grateful thanks to the many friends at Northrop for the flowers & expressions of sympathy we received in regard to the passing of my husband Charles (Chuck) Frantz. SHARON FRANTZ & CHILDREN.

Northrop Credit Union Revises NORCREDIT

The Northrop Credit Union, Hawthorne, is in the process of revising the NORCREDIT Plan to include a line of credit for secured purchases, according to Mary Delaney, manager.

NORCREDIT, which already enables qualified employees to obtain loans up to $2500 just on their signatures, is being expanded in the near future so that a qualified employee may borrow up to $5000 for secured purchases such as automobiles, boats, trailers.

And as always, Mary pointed out, the Credit Union's low interest rates and high dividends paid semi-annually to accounts make the Northrop Credit Union the logical solution to employee's financial needs.

Blood Bank Drive Has Good Response

A big "thank you" is in order to all who responded to the June Bloodmobile at the Aircraft Division. A total of 624 pints of blood was collected during the three-day drive, including the special Mariposa Bloodmobile, according to Jo Roth, Blood Bank chairman.

Special congratulations are in order to personnel of the outlying facilities, Alameda, Torrance, Mattel (AK). Mattel had highest turnout with 23 per cent of their personnel responding. Scheduling and transportation of donors is difficult and supervision and donors at those facilities get our special commendation for their splendid cooperation.

Hope to see many more in September when the quarterly Bloodmobile will again be at Northrop.

Help Needed In Locating Berlin Airlift Participants

Northrop employees who participated in the Berlin Airlift of 1948/49 are asked to contact George Salem, Aircraft Division ext. 4663.

A writer for The Reader's Digest Press, Inc., Richard Collier, will be visiting Los Angeles this fall and has asked to interview Berlin Airlift participants for a story he is writing.

NORTHROP NEWS

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Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Peter Goodall, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher. Correspondent, Northrop Hueneme, and editor, Spanish language edition: Joe Anguiano.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

Deadline Nears For Changes to Savings Plans

Any eligible hourly or salaried employee who wishes to change their contribution amount in the Savings Plan, or option directing the investment of their contribution, must complete an application card and submit it to Personnel Records no later than June 24, according to Hal Janssen, manager, Division Relations and Services.

Any changes made by this date will be effective on July 1. Eligible employees not presently participating in the plan may enter at this time.

For information regarding maximum amounts hourly and salaried personnel may contribute to the plan, contact Personnel Services at Hawthorne or Personnel Administration.

RAY RAKES hams it up with leading lady during rehearsal of 'Cat on a Hot Tin Roof' in which he played lead role. Ray has taken up acting as a hobby while on assignment to the C-5 overhaul depot at Kelley AFB, Tex. where he maintains the test equipment and performs repair and modification work. Ray also works with Air Force on-the-job trainees.

Looking for Excitement, Rakes Becomes a 'Star'

What does a person do for excitement in San Antonio, Tex., when not on the job? Well, if you are Ray Rakes, Field Service and Training Engineering, you become a star in the theatre.

Ray, who is assigned to the C-5 overhaul depot at Kelley AFB, has taken up the little theater as a hobby and has found his hidden talents earning him leading roles in such plays as Man of La Mancha, Filumena Marturano, Fantastics, Dark of the Moon, Saint Joan, and Cat on a Hot Tin Roof. He works with the San Antonio Community Theater Group.

"The only previous experience I've had in acting prior to this, was when I played one of the three wisemen in my third class Christmas play," Ray said. He also pointed out he wasn't exactly a box office sensation.

On the Job

While on the job, Ray is busy maintaining test equipment and performing repair and modification work on the primary components of the inertial navigation system of the C-5 Galaxy which includes primary and auxiliary computers, primary analog to digital computers, control power supply, control and indicator panels, MADAR (Malfunction Analysis Data and Recording) computer, and doppler system components.

In addition, Ray works with Air Force on-the-job trainees in the maintenance and support of the systems.

HOLIDAY SCHEDULE

With one 3-day holiday behind them, employees can plan on one more 3-day holiday and two 4-day holidays, in addition to the traditional long Yearend Holiday.

Holiday schedule for the rest of the year is as follows:

Independence Day, July 4 and 5; Labor Day, Sept. 2; Thanksgiving, Nov. 28 and 29; and Yearend Holiday, Dec. 23 through Jan. 1, 1975.

To provide maximum amount of time off, Saturday, June 29 and Saturday, Nov. 23 have been designated make-up days. Three floating holidays will be used with the Yearend Holiday. Employees will return to work Jan. 2, 1975.

SHE LEAVES, HE ENTERS UCLA

Greif Elected Phi Beta Kappa; Katayama Wins Scholarship

Rosalinda Joyce Greif, daughter of Stan Greif, director of Forward Planning, Palos Verdes, has been elected to Phi Beta Kappa and has graduated Summa Cum Laude with a bachelor of arts degree in history from UCLA.

Ms. Greif, who maintained a perfect 4.0 average throughout her college studies, has been accepted into the Ph.D. program in history at Stanford University where she has been granted a full tuition teaching fellowship.

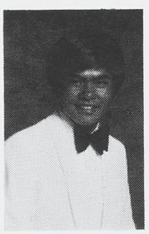
Rosalinda Greif

A member of three honor societies including Phi Alpha Theta — international honor society in history; Pi Gamma Mu — national social science honor society; and Alpha Mu Gamma — national foreign language society, Ms. Greif was the first recipient of the Cabrillo Award from the Department of Spanish and Portuguese for outstanding, conscientious and dependable efforts.

Among the honors she has earned are Undergraduate Research Fellowship from the president of University of California; the John F. Kennedy Scholarship, a grant from dean of students to do advanced primary research at the University of Oklahoma; honors at entrance; College of Letters and Science Honors program; Dean's Honor List of the College of Letters and Science every quarter; Honors program, Department of History; and Departmental Scholar.

Victor Katayama, 18-year-old son of Tad Katayama, supervisor Field Support Activities, Hawthorne, has been granted an athletic scholarship to UCLA for the coming fall.

Vic was recently named all-American in swimming as he paced his Mira Costa High School swimming team to a fifth-place finish in the CIF meet. Previously, he was named all-CIF in water polo on the Mustang team which finished second in the CIF finals.



Vic Katayama

Vic's clocking of 1:57.3 in the 200-yard individual medley, and his team's marks of 1:39.5 in the 200-yard medley relay, and 3:15.6 in the 400-yard freestyle relay, are what qualified him for all-American Honors.

Vic, who served as student body president, was named boy athlete of the year at Mira Costa and will enter UCLA as a veterinary science major with a 3.6 grade average.

Despite Successes, Division Artist Prefers Student Title

Sharon Ferrante, teletype operator, Hawthorne, likes to think of herself as a student of the arts rather than as an artist — a title which she could equally lay claim to if she wanted.

Sharon took up sketching and painting eight years ago as a hobby but has since discovered an inherent ability for portraying the human anatomy and most recently for creating portraits.

Like most beginners, Sharon's early ambition was to do her first oil portrait. "I felt funny showing people my first oil," she recalled, "not because it was a nude, but rather because it only took 10 hours to create."

But most observers aren't usually aware of that and have received her works favorably. In fact, her instructor at the Del Amo Art Gallery, Torrance, where she is currently attending evening classes, wanted her to immediately begin doing portraits. Sharon however, elected to continue the regular line of lessons and subject matter in hopes of gaining the knowledge that will prepare her to be a professional artist.

She is never in want of subject matter around her home as her eight-year-old daughter, Natay, is always a "willing model." A collector of works, also, Sharon is in her 11th year with Northrop.

SHARON Ferrante displays her first oil she accomplished in 10 hours. In back is sketching of daughter, Natay.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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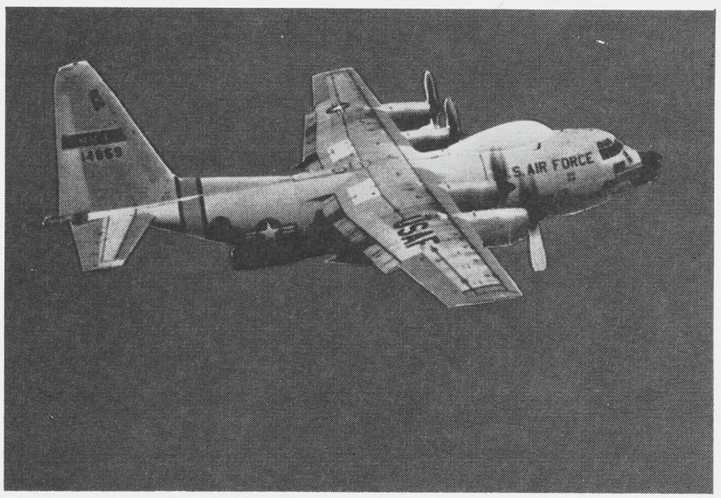
Appointees Named to Head Northrop Dakota

A. B. Lipscomb, vice president and manager, Avionics Department, has been elected president of Northrop Dakota, Inc., according to David N. Ferguson, corporate vice president and general manager, Electronics Division.

George Downs

Elected vice presidents of Northrop Dakota, Inc. reporting to Lipscomb were Harold E. Beadle, manager, Operations Department, who recently transferred to Electronics from the Aircraft Division, and George N. Downs, who was appointed plant manager at the New Town, North Dakota facility, replacing Jerry Howell, who has returned to the Avionics Department, Hawthorne.

Reporting to Downs at Northrop Dakota, Inc. are L. R. Finstad, supervisor, Finance and Administration; R. E. Frye, general supervisor, Manufacturing; L. A. Lindberg, supervisor, Materiel; and D. G. Ryan, supervisor, Quality Reliability and Test.



U. S. AIR FORCE WC-130 AWRS AIRCRAFT

Airborne Omega System Onboard Storm Hunter

Hurricanes will get a closer watch during the tropical storm season as the U. S. Air Force's newest storm hunter aircraft goes into operational testing this summer.

The Airborne Weather Reconnaissance System (AWRS) aircraft, a specially modified WC-130 equipped with Northrop's airborne integrated Omega/Inertial navigation system, will provide greater levels of weather data than were previously obtainable. The Northrop system is the world's first airborne navigation system for positional accuracies of about one nautical mile on a typical 3000-mile overwater mission.

Meteorological sensors of the AWRS provide continuous, accurate measurements of such weather elements as wind speed and direction, temperature, pressure and dewpoint/humidity at flight levels.

Operational testing of the AWRS aircraft will be conducted by the USAF Air Weather Service on flying weather reconnaissance missions over the Gulf and East coasts. The aircraft will be operated by the 53rd Weather Reconnaissance Squadron, Keesler Air Force Base, Miss. The AWRS was developed by Air Force System Command's Electronics Systems Division, L. G. Hanscom Field, Mass., with design and assembly accomplished by Kaman Aerospace Corp., a subsidiary of Kaman Corp., Bloomfield, Conn.

Skill Center Administrators Visit, See Former Student

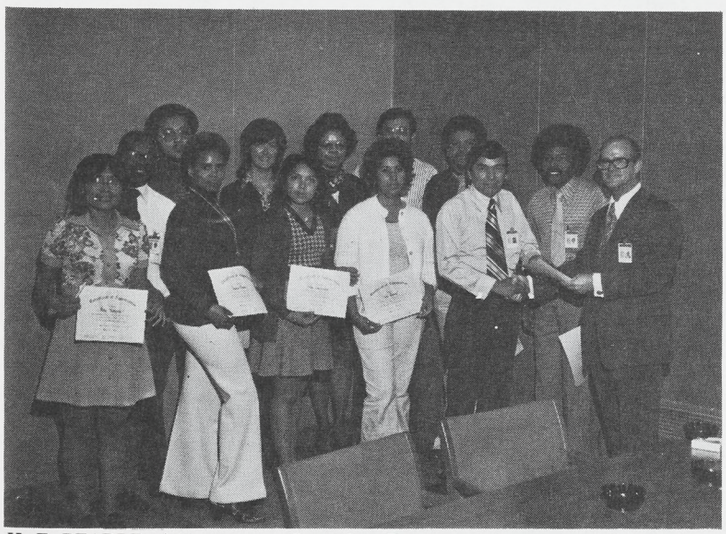
Administrators from the San Pedro-Wilmington Skill Center were the guests of the Electronics Division last month, according to Lore Krumreich, Administration, who coordinated and hosted the visit.

Leonard L. Griswold, principal at the Skill Center, and Virginia Fears, Business Department chairman as well as instructor, were invited to observe operations in the Accounting Department at Palos Verdes where Rachel Ruiz, a former Skill Center student, is employed as a general clerk.

Rachel joined Northrop in February and according to Harry Basford, supervisor, Accounting, has adapted very well to the work environment and is an asset to the section.

Formed under the Federal program for Manpower Development Training, the Skill Center is under the administration of the Division of Career and Continuing Education Los Angeles Unified School District. Helping physically capable persons between ages 18-65 to learn professions, the Skill Center has placed over 80 trainees in jobs throughout the community since October 1973.

"We have enjoyed a good working relationship with the professional staff at the Skill Center and have found the caliber of trained individuals that they have forwarded to us, consistently high," Lore said.



H. E. BEADLE, right, manager, Operations Department, presents certificates of appreciation on behalf of the Merit Award Association Chapter of Los Angeles to division employees who were volunteers on the Youth Motivation Task Force. Recipients pictured are, left to right, front, Eva Deschene, Lee Benton, Jo-Ann Leon-Guerrero, Rita Ramirez, Alex Martinez, and Mr. Beadle. Back, Otha Stubblefield, Jesse Ingram, Pam Roehrig, Pat Carr, Ed Subia, Peter Casey, and Larry Lee.

GOLF TOURNAMENT

The NRC Golf Club has scheduled a tournament at Azusa Greens Country Club, Aug. 10. Start time is 8:30 a.m. Cost is $6 to be paid at time of sign up. Entries will be closed on July 31.

VISITORS from the San Pedro-Wilmington Skill Center share a proud moment with former student Rachel Ruiz, seated, now a general clerk in Accounting, Palos Verdes, and Supervisor Harry Basford.

AIAA-Sponsored Meeting Scheduled For August 12-14

Engineers are invited to attend the sixth annual Aircraft Design, Flight Test and Operations Meeting, Aug. 12-14 at the Los Angeles International Hotel. The meeting is sponsored by the American Institute of Aeronautics and Astronautics (AIAA).

Some of the subjects to be discussed include program design and test program status, aircraft noise control, design-to-cost, operations/support, propulsion, structures and supersonic/hypersonic design.

For additional details, those interested are asked to consult their AIAA Bulletin or call (213) 670-6642.

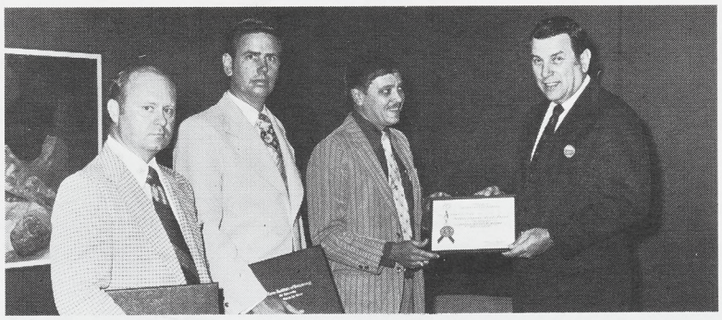
"An Evening with Jack Northrop and Colleagues" is the title of a session to be presented at 8 p.m. on Aug. 13 as part of the meeting.

Slides and Films

Slides and films narrated by the colleagues will portray Mr. Northrop's association with the aircraft industry since 1916.

Some of the former colleagues who will participate with Jack Northrop in this session are Irv Ashkenas, Eddie Bellande, Roy Brown, Bob Catlin, Walt Cerny, "Pappy" Clay, Fran Gibian, Ed Heinemann, John Myers, Tom Quayle, Denham Scott, Max Stanley, El Weaver and Roy Wolford.

The session is being coordinated by Charlie Eyres, assistant to the vice president, Engineering. An open invitation is extended to those who wish to attend. For further information on this session contact Eyres on Aircraft Division ext. 1385.



CAPTAINS Woodcock, Hollenshead and Vannier are shown with Welko Gasich, Aircraft Division general manager, right, during award of graduation certificates.

EWI Officers En Route to New Assignments After Graduation

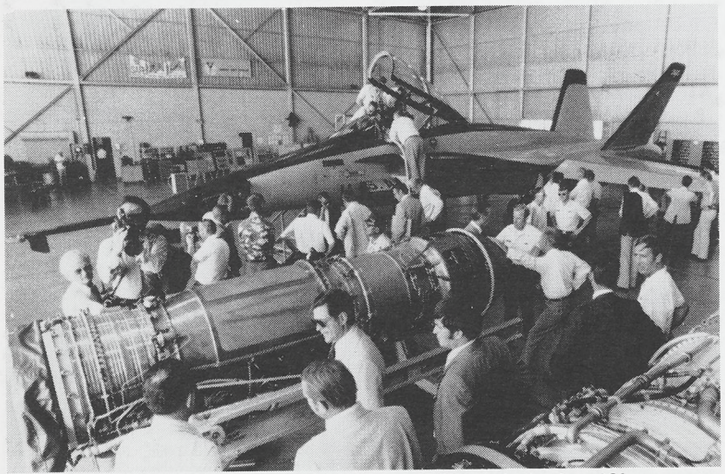
The three USAF-IT Education With Industry officers assigned to Northrop graduated in June. They are now en route to their new USAF assignments.

Captain Donald Woodcock is assigned as procurement officer, Hill AFB, Utah; Captain Harold Hollenshead, procurement officer, 13 Air Force, Philippines; and Captain Lavon Vannier, F-5 spares procurement, Kelly AFB, Tex.

The Education With Industry program, a joint effort of the Air Force Institute of Technology and leading government contractors throughout the United States, seeks to train the individual officer to interpret events and to make better decisions in a technological-management environment.

In a letter to Northrop, Major General Frank J. Simokaitis, commandant, Air Force Institute of Technology, expressed his appreciation for the excellent programs that Northrop has offered the student officers this year. He extended a particular note of thanks to Jim Anthony, EWI program coordinator, Aircraft Division, who has devoted much effort in making the program worthwhile and meaningful. He went on to state, "Our officer students hold Northrop's EWI program in high regard. We very much appreciated Northrop's support of the EWI program in the past, and look forward to continuing those successful programs in the future."

The officers' attitude toward the training they received ranged from fantastic to tremendous.



REPRESENTATIVES FROM Belgium, Denmark, The Netherlands and Norway get a firsthand look at the YF-17 prototype tactical fighter at Edwards Air Force Base, Calif. The multinational program committee, headed by Royal Norwegian Major General S. Hamre, inspected the YF-17 as a possible replacement for the F-104 Starfighter now used by various NATO member air forces.

NAS Completes Tests For Curtainwall Designs

Northrop Architectural Systems engineers successfully completed the required environmental tests for the curtainwall designs for the new Hyatt Regency hotel in Dearborn, Mich. The tests, held at Northrop Architectural Systems' facilities on June 26, were witnessed by representatives of the architects and general contractor.

The Hyatt Regency is one of four curtainwall contracts, totalling $1.6 million, Northrop Architectural Systems is working on now. The others are the Broadway Plaza, White Plains, New York; the II Touhy building, Des Plaines, Ill.; and a Two Oliver Plaza, Pittsburgh, Pa.

Tests for the curtainwall design for the Hyatt Regency were made in a concrete test chamber where controlled pressure differential worked with heavy water sprays and air pumps to simulate rain, wind loading common to the Dearborn area.

Design of the Hyatt Regency curtainwall was under the direction of John Walker, chief engineer. George Jarvis, engineering supervisor and Raphael Guerra, project engineer.

In addition to the engineers, others participating in the tests were John Jett, Moe Loara, Jerry White, George Green, John Seymour, Wendal DeGarmo and Dennis Lewis.

Subsidiary Ceases Operation; Aids In Job Placement

A legal dispute has led to the termination of operations at the Northrop Hueneme subsidiary and as a result, efforts are being made to find satisfactory work for the affected employees.

Andres Herrera, Industrial Relations manager at Northrop Hueneme, in coordination with Northrop Ventura Industrial Relations personnel said significant progress is being made in assisting with the relocation of the 390 workers.

Northrop has been in close contact with other divisions of the corporation and with local, state and federal agencies as well as the union which represented many of the Hueneme employees.

The subsidiary ceased production operations on June 25 as part of the legal dispute with Pacific Far East Line of San Francisco which had contracted for 200 of the giant fiberglass barges.

The dispute centers on PFEL's failure to inspect and accept delivery of any barges during the past two months. Last May, Northrop Hueneme advised PFEL, which had taken delivery of 131 barges, that failure to continue to inspect and take delivery of the barges could lead to legal action against PFEL.

On June 21, PFEL filed suit against Northrop Hueneme and Northrop Corporation seeking a judicial determination of the contractual rights and obligations of the parties and alleging damages of $105 million arising out of the $10 million contract for the barges. PFEL accepted delivery of the first barge in September 1972.

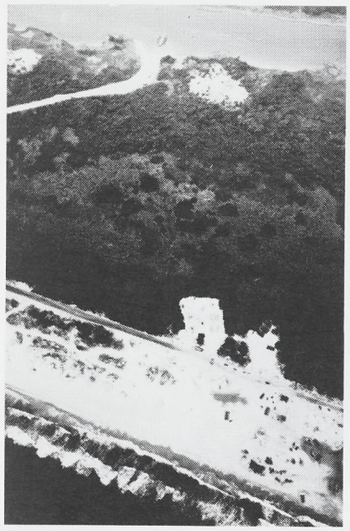
Northrop Hueneme, in terminating the contract with PFEL, said it intends to claim damages against PFEL for breach of contract.

PAGE EUROPA S.P.A. RECEIVES CONTRACT

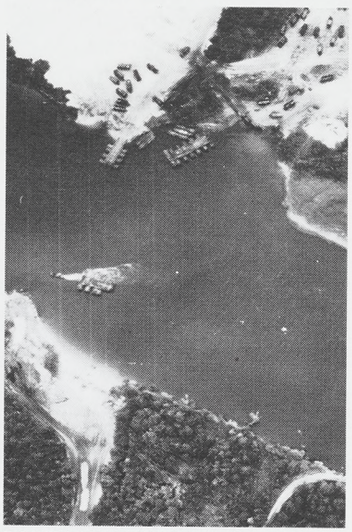
Page Europa S.p.A., a subsidiary of Northrop, has received a $3.3 million contract from the Italian Pipeline Company, SNAM, for telecommunications along a portion of a new oil pipeline between Iraq and Turkey.

The project includes engineering, furnishing and installing 17 microwave stations along a 350 mile pipeline connecting Rumaila and Haditha. Antennas, towers, telephone exchanges, primary power and telegraph data equipment are also included in the system.

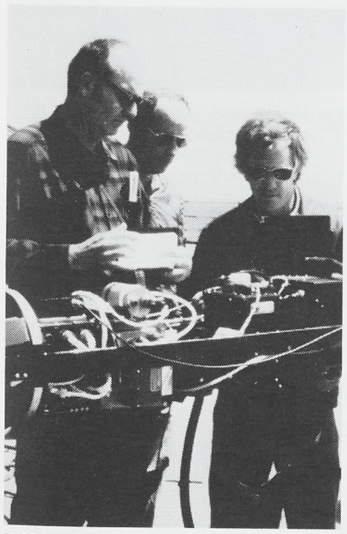
NV-128 Remotely Piloted Vehicle On Landing Exercises



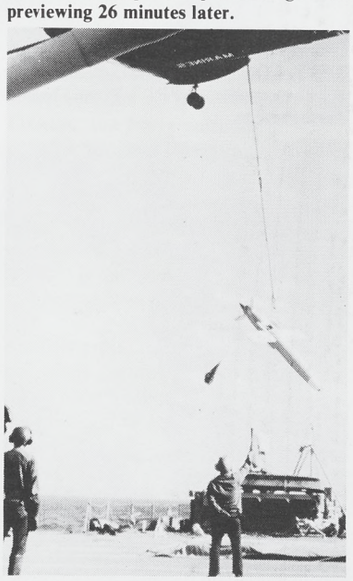
TACTICAL RECONNAISSANCE photo of the Camp Lejeune beach and adjacent areas taken at 1600 feet from a Northrop RPV during recent Solid Shield amphibious landing exercises shows vehicles on beach and pontoon bridge in upper right center of photo. Bridge is on Intracoastal Waterway. The RPV is a simple modification of the MQM-74 target drone made by the Ventura Division. Precise navigation is provided by a Litton AMECON Loran system which provides automatic commands to Northrop autopilot. Photos were taken by a CAI 70mm aerial frame camera.



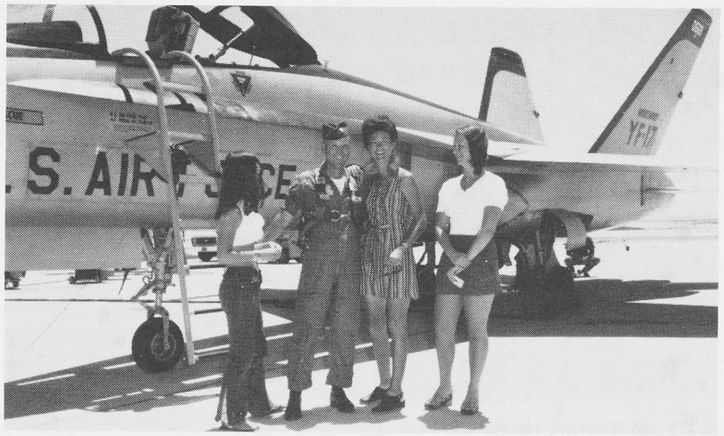
PONTOON BRIDGE section is shown being towed across Intracoastal Waterway at Camp Lejeune during recent tri-services Solid Shield amphibious landing exercises. Other bridge sections and parked vehicles are also shown. Photo is one of a series taken with a CAI 70mm aerial frame camera installed in a Northrop RPV and flown from an amphibious assault ship outside visual distance of coastline. Altitude was approximately 1600 feet. The flight demonstrated the feasibility of an RPV that could provide quick response pictorial data to a command ship during an amphibious operation. Just 72 minutes after launch, exposed film arrived on the command ship for processing with previewing 26 minutes later.



INSPECTION of Northrop NV-128 RPV is made by Northrop and Navy engineers prior to the RPV's successful photo-reconnaissance mission during the tri-service Solid Shield amphibious landing exercise off Camp Lejeune, N.C. The RPV, a modified MQM-74 target drone, carries both still and motion picture cameras. Just 72 minutes after launch, exposed film was delivered to the command ship with previewing 26 minutes later. From the left are Darrell Welch, Navy Ensign Gregg Howard and Marty Day.



NV-128 Remotely Piloted Vehicle is shown being lowered to deck of Navy LST following recovery from Atlantic off Camp Lejeune, N.C. during recent tri-services Solid Shield amphibious landing exercises. The RPV is a development of the Ventura Division and its use as a photo-reconnaissance vehicle is believed to be a first for such an exercise.



LT. COLONEL Jim Rider shares the happy occasion of his first flight in the YF-17 fighter prototype. He was the first Air Force pilot to fly the YF-17. Sharing the 'first' with Rider are his wife, Jackie, center and daughters Jill, left and Linda, right. (United States Air Force photo)

Royal Netherlands Air Force Pilots Fly NF-5s In NATO Weapons Meet

Pilots of the Royal Netherlands Air Force flying NF-5 aircraft, took top honors in the Attack Section of the air forces Central Europe tactical weapons meet held in West Germany in early June.

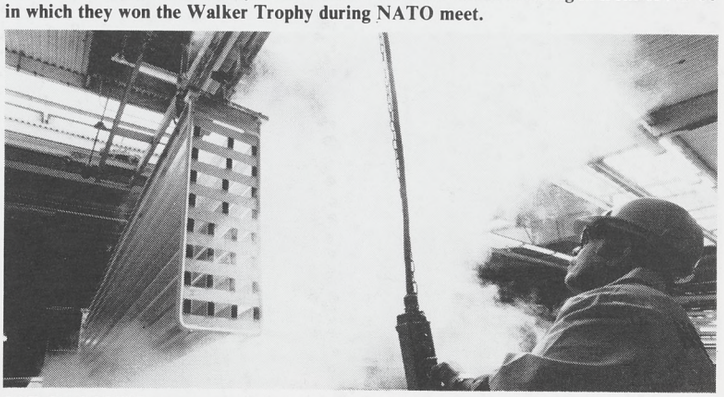
For the victory, the Dutch team was awarded the Walker Trophy.

The NF-5s won out over Canadian Air Force F-104s and French Air Force Mirages.

Teams from Britain, Belgium, Holland, Canada, West Germany and the United States took part in the meet. Only the Dutch flew F-5s. The other countries entered either F-104s or F-4 Phantoms.

Members of the victorious Dutch team were: Maj. J. P. Penson, Capt. H. Eylers, Lt. J. P. Soolsma, Lt. V. Reith, and Lt. Bonnema.

MEMBERS of victorious Royal Netherlands Air Force team standing in front of NF-5s in which they won the Walker Trophy during NATO meet.



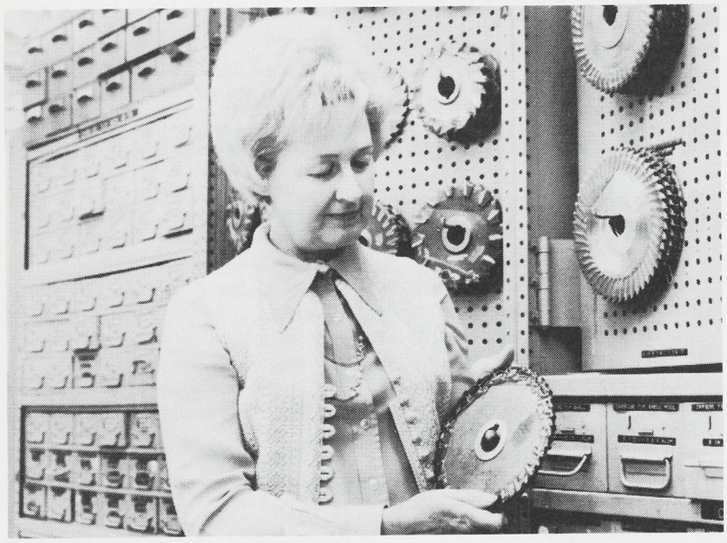
JOE VASQUEZ turns a switch to remotely lift extrusions from the anodizing vats at Northrop Architectural Systems. The anodizing department is one of the most modern and efficient in the west.

Women At Work At Northrop Doing Just About Every Kind of Job

Women? You'll find them just about everywhere in Northrop, doing just about every kind of job as these pictures show, from glazing windows, to purchasing, to engineering.

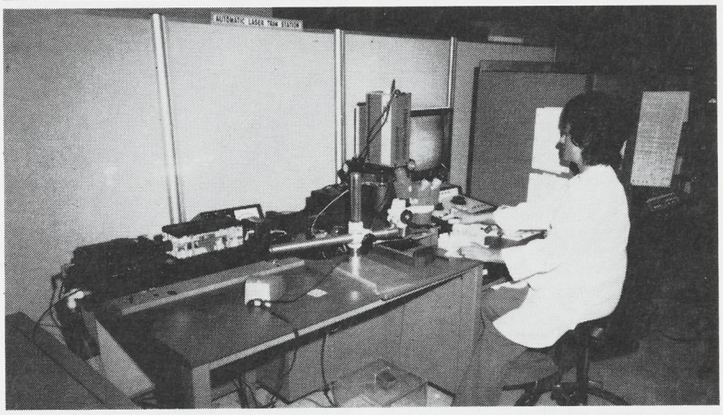
The skill and dedication of its many women employees are two of Northrop's greatest assets.

JUDY HAMMERS builds windows at Northrop Architectural Systems. Using jigs to hold the glass, she can glaze 90 34 by 57 glass sliding windows a day. Northrop Architectural Systems provides custom products to the architectural industry.

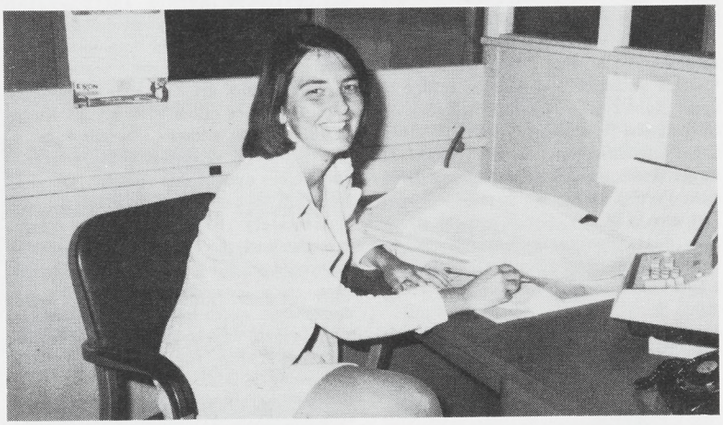


NANCY EASTERLY, Electro-Mechanical Division, is a purchaser for perishable tools, handling orders of over a third of a million dollars a year. Here she checks newly purchased machine cutters.

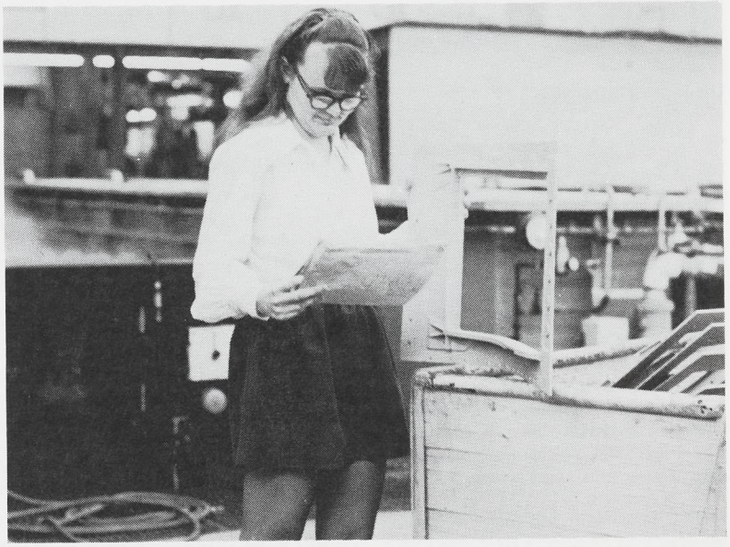
REWARDING PROFESSION is engineering, says Lloyd Bristol, an engineer with the Ventura Division since 1957. She would recommend engineering as an excellent profession for interested women.



LASER trim system operator Amelia Huerta operates computerized laser trimmer in the Micro-Electronic Development group at the Electronics Division, Hawthorne. Amelia is responsible for trimming substrates.



MARY LOU HARWOOD, Precision Products Department, Norwood, Mass., is a project controller at PPD's Plant Three. Mary Lou is a graduate of the University of Massachusetts.



ENGINEER Catharine Bruce inspects part in Anodizing section at Aircraft Division, Hawthorne, during normal duties as member of Materials and Process Control Department. Catharine holds a bachelor of science degree in chemistry from USC and is awaiting approval of thesis towards a master's degree from USC.

TURKISH FOREIGN exchange student Serdar Gurz, right, listens as Robert Patchin, Aircraft Division Customer Requirements, explains assembly procedure at the Hawthorne facility. With them is John Faranda, son of Paul Faranda, corporate director, Industrial Relations. John co-hosted Serdar during the past school year at Mission Viejo High School where John is student body president. Serdar is the son of Lt. Colonel Gurz, a flight instructor in the Turkish Air Force.

NRC Travel Club Has Full Slate of Activities Scheduled

A full slate of activities is scheduled by the NRC Travel Club in coming months with a Las Vegas weekend, Hawaiian Polynesia tour, and Hearst Castle-San Luis Obispo weekend in the offing.

Reservations are still being taken at the Aircraft Division Personnel Activities office for the Las Vegas Plaza Playtime weekend Sept. 6-8. Price per person is $49 and includes refreshments en route to Las Vegas, deluxe chartered Continental Trailways bus transportation from Plant One cafeteria to Las Vegas and return, two nights lodging at the Union Plaza (double occupancy), one prime rib dinner in the elegant Gazebo Room, and many other extras.

Contact Cathy Paris, ext. 2486 for reservation information.

A dream Hawaiian Polynesia tour will depart Sept. 9 via Western Airlines for a 14-day, four island sightseeing excursion. Price for the trip is $499 plus tax and services. A meeting of those persons interested in this tour will be held Wednesday, Aug. 7, at 7:30 p.m. in the Alondra Club, Lawndale.

Contact one of the following Travel Club commissioners for reservation information: Dave Carney, Aircraft, ext. 1682; Jeanne Zubak, Electronics, ext. 542; Jack Kinzer, Electro-Mechanical, ext. 244; or Tony Piscuskas, Ventura, ext. 371.

The annual weekend excursion to the Hearst Castle, San Simeon, will depart the Aircraft Division Oct. 26, at 9 a.m. via airconditioned Greyhound buses.

Lunch will be served at the famous Andersen's Split Pea Soup Restaurant in Buellton, followed by two hours of browsing in the Danish community of Solvang. Overnight accommodations will be at the Howard Johnson's Motor Lodge in San Luis Obispo and the following morning the tour of the Hearst Monument of either the Enchanted Hill Lower Floor or the La Casa Grande Upper Floor. Price per person for the entire package is $30.

Reservations with preference of tour desired is due to Aircraft Division Personnel Activities no later than Oct. 7.

Naval Air Reserve Openings Available

If you are a former Navy man — or even if you aren't — there may be a place for you in the Naval Air Reserve Unit at Point Mugu, near Oxnard, the Navy announced.

With the new Navy pay scale in effect, an E-5 with more than four years' service will earn a minimum of $64.84 per weekend, and recruits now earn $43.48 per weekend in the reserve program.

There are openings in most aviation ratings. Additional vacancies exist for commissaryman, disbursing clerk, steward, hospital corpsman, personnelman, yeoman, radarman, dental technician, and journalist rating.

Limited openings are also available in the reserve's advanced pay grade program, which allows personnel with related civilian occupational backgrounds to be enlisted at a pay grade commensurate with their background and supervisory ability.

More information may be obtained from the personnel office or NARU Recruiting, Naval Air Station, Point Mugu, Calif., 93402; or phone collect (805) 982-8744.

Commander Lauds Northrop Worldwide Aircraft Services

The President and Mrs. Nixon visited Vance Air Force Base, Enid, Okla. in May. During his visit to Oklahoma, the President spoke at the commencement exercises at the Oklahoma State University at Stillwater.

Upon the President's departure from Vance, Colonel Schuyler Bissell, wing commander at Vance, expressed his thoughts to all personnel at the Air Force base and the surrounding communities. He specifically made mention of the Northrop Worldwide Aircraft Services, Inc. personnel with the following statement:

"To all operations and maintenance support personnel, who performed their mission outstandingly despite the interruptions necessitated by a busy week, the value and importance of good managers, good supervisors, and hard-working personnel were never more in evidence than during the past week. To all personnel of Northrop Worldwide Aircraft Services, Inc. for your unselfish giving of time and effort in preparing the base for the President's visit. Even on Saturday night after the 'Spirit of 76' departed, you were there providing the needed efforts to cap a perfect day."

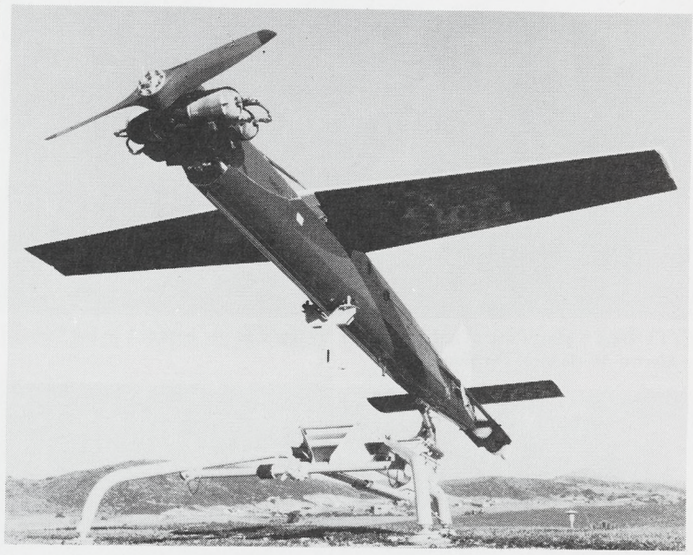
He added a personal thank you to all for making that Saturday a great day for Vance and the Air Force.

STAINLESS STEELS COURSE OFFERED

A 12-week course on the metallurgy of stainless steels will be offered at Northrop starting Sept. 25 to Dec. 11.

The course, sponsored by the American Society for Metals, will be held on Wednesdays from 7 to 9:30 p.m. at the Aircraft Division. Tuition fee is $45 for ASM members, $55 for non-members. Contact Dave Apodaca, instructor, ext. 1401, for further information.

Historically Speaking . . .



PROBABLY THE oldest continuing production program within Northrop is the KD2R5 target aircraft drone which continues at the Ventura Division after 28 years. Originally designed in 1946 when the Ventura Division was known as Radioplane and located in Van Nuys, the KD2R5 is the last in the KD2R series. Estimates place the total production of the little propeller-driven drone at more than 60,000. At the present time the armed forces of 16 nations are still using the drone as a training target for ground-to-air gunnery as well as a target for surface-to-air missiles. Such weapons as the Seacat, Tigercat, Redeye, Blowpipe, Sparrow, Chaparral and Nike are fired at the drone. The KD2R5 is a cantilever, high wing monoplane built essentially of aluminum alloy and powered by a Northrop 0-100-3 four cylinder, air-cooled engine which drives a two-bladed fixed-pitch propeller. The drone can fly to altitudes of 27,000 feet and to speeds of 195 knots. Maximum range is 185 nautical miles. The KD2R5 carries two wingtip reflector pods for radar augmentation. It is surface launched either by catapult or zero launcher. The drone is radio controlled while flying and recovery is via parachute.

Wingspan: 11 feet 6 inches ***Weight (empty): 271 pounds***
Length: 12 feet 7½ inches ***Weight (max. launch): 360 pounds***

Rose Fancier Keeps Company Property Beautiful With Flowers

The Electro-Mechanical Division is a more beautiful place to work these days — and Betty Duba is the reason.

Betty, value engineer for the division, is also a member of the NRC Horticulture club and a rose fancier. Gardening at noon and weekends on open patches of the company's property, Betty bypasses the vegetables grown by her fellow club members and specializes in flowers.

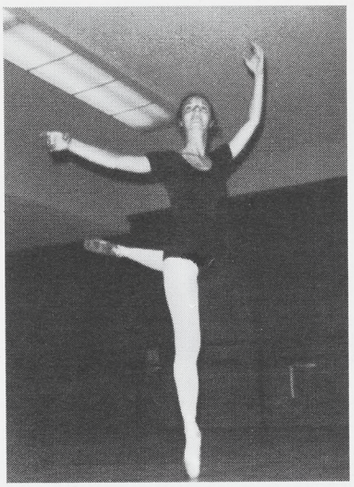
She grows them in such profusion that she is currently harvesting two pails of blossoms a day, resulting in as many as six bouquets which she places in offices and lobbies around the Anaheim plant. All are beautifully arranged according to the Japanese Nageire school of flower arrangement. This school builds its arrangements upon a non-symetrical triangular base with three points to represent heaven, mankind and earth.

Betty began her rose program for the plant three years ago with five bushes. This has now increased to 34 and more are planned to fill the entire 3 by 500-foot area available to her. Several varieties are grown, including climbing roses, tea roses, florabundas and grandiflora bushes. Four bush roses bloom late to provide deep red roses for Christmas each year.

The extraordinary success she has had with her roses at Northrop is due to "expert help," Betty said. She cited an example. When her climbing roses failed to produce properly she placed a long distance call to her father in Indiana. He had her explain exactly what she was doing and immediately pinpointed her trouble: she was pruning the climbers as she would a bush rose — and this is wrong. Now her climbers, which produce large yellow blossoms, are her best blossoming plants.

BETTY DUBA places one of her beautifully arranged flower bouquets in the lobby of the Electro-Mechanical Division.

CHALLENGE SOFTBALL play pitted 'allstars' of Corporate Finance and Corporate Communications coached by Ken Mars, against a team of Legal, Industrial Relations, and Marketing stars headed by Len Kissell. When it was over (?), the Mars squad had defeated the Kissells, 22-12. Joyce Carver is shown driving in the first run of the game with an infield single scoring Al Johns from third base.



DENISE DERUS danced her way into the Royal Ballet School in London. She will depart for England in September.

Ballet Dancer Departs For Royal Ballet School

Denise Derus, 17-year-old daughter of Vinnie Derus, Northrop Credit Union, Hawthorne, has been accepted into the Royal Ballet School in London.

Denise has been studying intensively since age 13 but started dancing at 4. She is currently studying at the Stanley Holden Dance Center under Stanley Holden and Margaret Hills, both of whom were former Royal Ballet dancers. Denise has set a goal to be a member of a ballet company in the United States or in Europe.

A graduate of Rolling Hills High School, Denise will depart for England in September.

Palmdale Employee's Son Signs Baltimore Orioles Contract

It has been a busy few weeks for Gary Brandenburg.

In short order he: graduated from Oklahoma State University with a B.S. degree in business; received his college baseball team's honors as the Most Valuable Player; inked a professional baseball contract with the Baltimore Orioles; and reported to the Orioles' Lodi, Calif. team where he promptly earned a starting catcher's job.

Gary is the son of Earl Brandenburg, manager of Manufacturing Control and Materiel for the Aircraft Division's Palmdale Production Flight Test Facility. He is the oldest of three sons.

Before moving on to Oklahoma State, Gary was an all-star catcher in Little League and Pony League action around Lancaster. He was a three-sport — football, baseball and basketball — letterman at Antelope Valley High and could have taken an athletic scholarship in football after his fine showing as an offensive center and a defensive linebacker in high school.

However, he opted for baseball, set his sights on a college scholarship and won it going away. He went on to letter four years at Oklahoma.

While Gary puts a lot of store in baseball, and hopes to move up into the majors in short order, he has his eyes on other goals, too.

"I feel there are a lot of things in life more important than baseball — I've been thinking of going for my master's degree in business administration. But I'm going to give it a good shot and hope for the best."

Playing at Lodi in the California State League is an important step for Gary toward a berth at Baltimore. He is now in the upper A league and has skipped rookie and lower A leagues on his way up. After only a few days on the Lodi roster, he moved into a starting position and has been there since.

Gary grew up on the sandlots of the Antelope Valley and became a catcher by accident. "One day they said they needed a catcher, so I got behind the plate. And stayed," he says.

During summers while attending Oklahoma State, Gary played amateur baseball or attended baseball camps.

GARY Brandenburg inks Baltimore Oriole contract at Ramada Inn, in Lancaster. Left to right, Tom Gamboa, San Francisco Scout; Gary; Ray Poitevint, supervisor of Scouting West Coast; Mr. and Mrs. Brandenburg; Gary's brothers, Greg, and Gil.

Classified

A free service for Northrop personnel only. The right to edit or emit ads is reserved. Ads limited to one per family. Deadline is noon the second Monday of each month.

Vehicles For Sale

Motorcycle, Yamaha 360, MX-71, racing equipped, $550. 213-379-0150.

Camaro, 1968 Rally Sport, auto., p/s, radio, $1150. 213-374-6585.

Dodge Dart, 1965 2-dr., auto., p/s, p/b, $450. 213-823-6569.

Jaguar, 1957 MK VIII sedan, manual shift w/overdr., radio, manuals, spares, $850. 714-633-5521.

Chevelle Malibu, 1968, 327 V-8, new wide oval tires, American mags, p/s, $700. 213-430-6979.

Chrysler, 1968 2 dr., a/c, p/s, p/b, tach., 30,000 mi., $1100. 213-376-0097.

Motorcycle, 1969 Husqvarna, 360 cc MX, Mikuni, Motorplat ign., $550. 213-679-4863.

Chrysler, 1969 New Yorker, 4-dr., a/c, full pwr. equip., 6-way seat, $975. 714-968-7987.

Volkswagen, Baja Bug, $550. 213-376-6119.

Motorcycle, 1970 Honda CB350, 13,000 mi., $375. 213-822-1178.

Motorcycle, 1970 Suzuki 500, new eng. & tires, $450. 714-846-6026.

Volkswagen, Baja, $700. 213-397-6490.

Ford, 1969 LTD, 2-dr., p/s, d/brakes, a/c, new tires, 40,000 mi., $1250. 213-320-6657.

Motorcycle, 1972 Bultaco, dirt, $650. 213-675-3254.

Toyota Corona, 1973 wagon, 4-dr., std. trans., $2400. 213-869-6842.

Mercedes-Benz, 1965 220 B, 6 cyl., 4-spd., new blt. head & valve job, AM radio, $1500. 213-547-4358.

Camaro, 1972, 29,000 mi., a/c, radio, stereo tapes, $3000. 213-541-3513.

Truck, 1973 Toyota, w/Globe camper shell, 11,000 mi., 4 cyl., 4-spd. stick, a/c, radio, $2900. 213-370-7861.

Motorcycle, 1970 Kawasaki, 350 cc, reblt. eng., $425. 213-377-8815.

Ford, 1961 station wagon 292, p/s, $250. 213-324-4370.

Motorcycle, 650 Triumph Bonneville, many extras, $1200. 213-868-4915.

Mini Home, 1973 18' Tahoe, on Dodge Sportsman, 360 cu. in., dual whls., sleeps 6, fully self-contained, $6800. 714-623-4249.

Motorcycle, 1973 Yamaha Enduro, 100 cc, 2000 mi., $300. 213-542-5259.

Dune Buggy, 1962 VW, 40 h.p. eng., crashbox trans., rear dirt tires, extras, $600. 213-320-0209.

Datsun 240Z, 1971, 19,000 mi., mags, alarm, ski rack, $4400. 213-379-8248.

Miscellaneous For Sale

Travel Trailer, 17' Norris, sleeps 6, self-contained, pressurized water, 115V/12V. elect., $995. 213-378-7846.

Mobile Home, 10'X50' at Mammoth in Ski Trails Park, 1-bdrm. w/8' x 10' entry/storeroom, completely furn., $3500. 213-596-0316.

Camper Shell, 8' bed, off 1962 Chev., $100. 213-429-4218.

Truck Bed Cover, fiberglass, hinged w/handle & lock, fits any import pickup, $100. 213-421-0834.

Bicycle, boy's Schwinn 20" Stingray, $60. 213-675-1057.

Dining Room Set, Danish, 6 chairs, $130, other items, various price. 213-530-3838.

Camera, Konica Auto Reflex T, lens Hexanon 1:1.4 F-57mm, case, $190. 213-473-2826.

Coaster Bicycle, men's $17.50. 213-376-4831.

Ski Boat, 1973 19' Tahiti, 455 Olds jet drive, $4100. 714-897-6046.

Sofa, 8', lt. green, cushion-back, int. construction of h/wood & spring, $75. 213-545-0449.

Exercise Cycle, near new, $20. 213-370-8835.

Pup, AKC Yorkshire, male, dog-door trained, $175. 213-373-6209.

Oscilloscope, Eico Model 425, $35. 213-675-3866.

Bunk Bed Frame, walnut, twin bed size w/ladder, $25. 213-377-3806.

Miscellaneous For Sale

Bedroom Set, dble. bed, h/board, 6' dresser w/mirrow, walnut, $89.50. 213-644-7079.

Boat, 16' alum., cartop-type, 7½ h.p. air-cooled 4 cy. Lawson outbd., $200. 213-672-4794.

Camper, cabover, sleeps 4, jacks & toilet, used 3 times, $800. 213-676-7104.

Couch & love seat, gold velvet, 1 yr. old, $200. 213-633-7785.

Pups, Dalmatian, AKC reg., blk/wh. & brown/wh., $75. 714-637-3652.

Dinette Set, cast alum., 42" dia. glass top table & 4 chairs, recently uphols., $139.95. 213-377-6124.

Beer Tap set up, w/10# gas bottle, $75. 213-422-3932.

Washer, dryer, Kenmore, $100. 213-675-8694.

Motor, 1972 4½ h.p., Sears, used 5 times, $75. 213-835-5859.

Engine, newly reblt. Pontiac 383, racing oil pump, Holley 4-bbl., auto. or man, never run, $350. 714-774-2779.

Bedroom Set, dresser/mirror, head & foot boards, 2 end tables, highboy, $325. 213-530-3197.

Movie Projector, Bolex 18-5, reg. 8 mm w/sound adapter, $135. 213-324-0229.

Tent Trailer, sleeps 4, $125. 805-483-5644.

Mobile Home, 10 x 50 Biltmore, furn., 10 x 20 screen rm. & car port, 6 x 8 util. shed, 2-bdrm., bath, adult park, $4200. 213-675-7547.

Saxophone, E flat, & case, $125. 213-325-8932.

Rifle, 30-06 BSA English, Weaver K-2.5 scope, sling, case, $125. 213-375-7265.

Overload Springs, set of Hellwig, $50. 213-378-3838.

Hi-Fi, walnut, Bogen rec., Garrard changer, Altec Lansing spkrs., $450. 213-994-4945.

Dinette Set, table, 4 chairs, 2 yrs. old, $25. 213-327-3443.

Bicycle, girl's Stingray, $25. 213-373-5452.

Captain's Chairs, 4, $25 ea. 213-675-1000.

Wedding Gown, size 10, imported, $70. 714-892-5801.

Breakfast Nook, 4' x 6, L shape, matching table & chair, green vinyl, $75. 213-423-1363.

Citizen's Band, Johnson #320 unit w/2 mikes & antenna, $150. 714-847-5429.

Camper Shell, Perris Valley, for small pickup, $225. 213-845-2785.

Washer, Lady Kenmore, Hamilton gas dryer, white, reconditioned, $125. 213-944-3794.

Trailer, 1973 Ideal, 22½', self-cont., forc. air, refrig. air, tub-shower, $4350. 805-498-3131.

Sofa, contemporary, brown, crinkle soft vinyl uphol., 1 yr. old, $95. 714-984-1946.

Snow Tires, 2 B78-13, Firestone, 4-ply polyester, $15 ea. 213-672-5238.

Washer, Hoover portable, white, $25. 213-324-2021.

Cat, Balinese, altered & shots, $35. 213-378-3529.

Dehumidifier, practically new, $10. 213-675-6449.

Bird Cage, lge., 40½" x 26" x 20", $25. 213-371-8021.

Sofa, custom made, 7' lg., reversible cushions, green & antique-gold satin, $175. 213-756-3669.

Turntable, Philips 9A212, electronic, w/Shure V1511 cartridge, $100. 213-328-4128.

Movie Camera, Canon auto. zoom, w/Bell & Howell sound synchronizer, leather case, $200. 213-397-0124.

Pups, toy platinum male & female poodles, champ. background, AKC reg., $100 & up. 213-329-7994.

Bicycle, man's 1973 Le Mans 10-spd., ridden 139 mi., speedometer, non-cut cable lock, $90. 213-324-8853.

Children's Library, 15-vol. Childcraft series, stories, poems, facts, $25. 213-831-6567.

Dog, Irish setter, female 1½ yrs. old, grand champ. bred, $100. 714-897-2632.

Floor Cushions, decorative genuine cowhide, from South America, $31.50. 213-542-8497.

Wanted To Buy

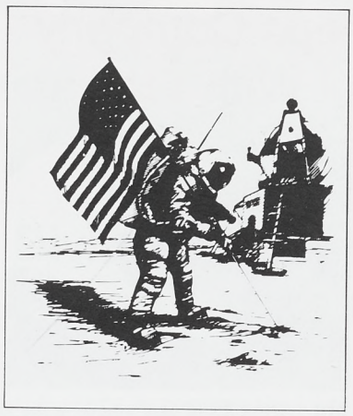
Wheelchair, good condition, reasonable. 213-833-4272.

Bunk Beds, reasonable. 213-372-2226.

Japanese KOI, 12" or larger. 213-833-6045.

Maverick, late model, must be in good condition. Prefer w/air, auto. & p/s. 213-679-6982.

Pickup, 1956 Ford, with or w/out engine. 213-329-0527.



FIVE YEARS ago — July 20, 1969. That's the day of the fifth anniversary of Apollo 11. Astronauts Neil Armstrong and Edwin Aldrin became the first humans to set foot on the moon. The immediate legacy of Apollo 11, and later moon explorations, can be measured in terms of the enormous amount of scientific information and material returned from the lunar missions themselves.

DIVIDEND DECLARED

The board of directors of the Northrop Credit Union, Hawthorne, has announced the posting of a seven per cent dividend per annum to shareholders of record May 31.

For Sale Or Trade

Transaxle, VW Transporter, $175 or trade for conventional transaxle. 213-545-8146.

Mercury, 1972 Montego MX, 4-dr., air, radio, $2500 or trade for sports car. 213-374-9944.

Rentals Wanted

Motor Home needed Aug. 31 - Sept. 14, must sleep 6 & be self-contained. 714-847-6286.

Found

Lens from eye glass, lost at Hollywood Park June 15 in Northrop reserved seats, lady w/white boots & green shirt please claim, don't know how to locate you, Electro-Mechanical Div. ext. 237.

Personals

My sincere thanks to the many friends at Northrop for the flowers & expressions of sympathy on the death of my husband, John Schindler. RITA SCHINDLER

I want to thank all my friends for the best tasting cake, wonderful gifts & with all your good wishes upon my retirement. I'll remember you all forever. ED 'GERDY' GERDOVICH.

My family joins me in extending our most grateful thanks to the many friends at Northrop for the cards & flowers we received during my illness. JOHN KENNEDY.

We would like to express our appreciation to our friends at Northrop for their thoughtfulness & flowers in the death of our husband & father Floyd Rumsey. SHARI RUMSEY & PAULA SAAVEDRA.

Sincere thank you to our many friends at Northrop for the thoughts & deeds of kindness during our recent bereavement. WAYNE & LILLIAN TSUKAHIRA.

BERT PORTIER adjusts his drill press in the Anaheim plant machine shop. Above him are part of the 500 plastic bubble skylights that have contributed so much to the division energy conservation program. Photo by Bob Thornton.

Personals

Our sincere thanks to all the friends of Dick Pillar for the thoughts, prayers, & deeds after the sudden loss of our precious one. Also, thank you, Northrop friends who donated over $200 in Dick's memory to the new paramedic unit for the city of Hawthorne. ELAINE, JULI, STEVEN, & CHRIS PILLAR.

Ride or car pool, Fairview & Trask, Santa Ana-Garden Grove, 8 a.m.-4:42 p.m., Aircraft Div. ext. 2754, 714-534-6852.

Car Pool, Woodland Hills-Canoga Park area, 7:30 a.m.-4:15 p.m., Mariposa faciliy, Aircraft Div., ext. 6266. 213-348-7996.

Want to start or join ride pool from Woodland Hills, Aircraft ext. 1721, 213-887-7418.

Free

Dog, small female, mix Labrador & beagle, black, about 2½ yrs. old. 213-374-6401.

NORTHROP NEWS

Vol. 32 No. 7

Published monthly by Northrop Corporation Employee Communications

Managing Editor ..... **Rosemary Hussey**
Editor—Electro-Mechanical Division ..... **Ivy Edmonds**
Editor—Ventura Division ..... **Park Irvine**
Editor—Aircraft, Electronics Divisions ..... **Tom Quintana**
Editor—Precision Products Department ..... **Peter Goodall**
Correspondent—Architectural Systems ..... **Wanda Fisher**

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Twenty-Two Receive July Service Awards

Service awards are being presented to 22 division employees during July with five 20-year recipients heading the list. They are: R. J. Huck, Palos Verdes; Norman Henry, W. T. McCann, J. J. Schuler, Jr., and F. F. Wilson, Hawthorne.

15-years — E. K. Lee, L. R. Pierce, G. N. Keskeys, and R. L. Fero, all of Hawthorne. 10-years — Raymond Van Orden, Hawthorne. 5-years — D. A. Fawcett, W. O. Manaka, B. B. Lamm, L. L. Adkins, Robert Skelton, Jr., B. J. Neal, R. C. Gilbert, Roy Romero, M. V. Sandoval, and H. E. Poston, Hawthorne; C. E. Shipp, Western Avenue warehouse; and B. M. Ritter, Berkeley Scientific Laboratories, Inc., Hayward.

PICNIC COMING NEXT MONTH

All employees are invited to the Northrop Family Picnic Sunday, Aug. 25, at the L. A. County Fairgrounds, Pomona, hosted by the Aircraft Division. Admission is free with tickets available for rides, refreshments, and games, plus a raffle for valuable prizes including a 1974 Pinto Runabout. Contact Personnel Activities.

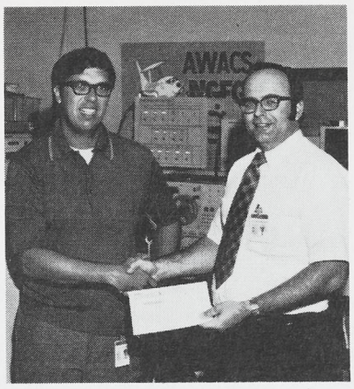
Gaile Johnson's Daughter Elected To Phi Beta Kappa

Janet Lynn Johnson, daughter of Gaile Johnson, secretary, Finance, Palos Verdes, was elected Phi Beta Kappa and graduated from UCLA in June with a bachelor of arts degree in music.

Janet Lynn

Janet is an accomplished pianist and had studied privately for nine years prior to entering UCLA. She graduated from Rolling Hills High School. Historical musicology will be her field of study when she continues her education in the fall at the UCLA graduate school.

Among the academic awards she has won are, member of Alpha Lambda Delta, Freshman Women's Honorary Scholastic Fraternity; named a Regents Scholar; member of Mortar Board; honors at entrance.



BIG WINNERS of cash awards in the Employee Suggestion Program receive award certificates from supervisors. At left, Norbert Nastanski accepts check for $297 from John Pastizzo, while at right, Bob Arrasmith, left, chief of Maintenance, and Wes Carter, right, director of Facilities and Property Administration, present $626 suggestion award to Edwin L. Smith, air conditioning mechanic.

Over $1300 in Cash Awards Earned Through Suggestions

Over $1300 in cash awards were received by division employees during June for ideas submitted in the Employee Suggestion Award program, according to Cheryl Lee, program coordinator.

"This time we had dual winners from three different departments," Cheryl noted. "Though it isn't unusual, it shows that entire sections are looking at themselves and their daily routines and realizing needed job improvements."

Heading the list of winners was the Maintenance section where Edwin Smith, air conditioning mechanic, and Thomas Weaver, supervisor, earned $626 and $65 awards, respectively.

Smith's idea called for the use of a by-pass system on the high stage compressor enabling it to run full time and allowing the chambers to meet required specifications and reduced maintenance to the system. Weaver's suggestion called for installation of an emergency shut off valve on a hydrogen line.

Engineers Norbert Nastanski and Sylvan Shulman of the Linear Systems Test unit were also awarded cash certificates. Nastanski received a $297 check for his idea for utilization of computer reels which effected a material saving, and Shulman earned $85 for his suggestion dealing with a circuit card ejector tool.

The Material Control unit had double winners in William Baker and R. T. "Rocky" Stamps, Material Requirements analysts, who split an $80 cash award for their idea calling for purchase requisition consolidation and conservation.

Donald Secord, Quality Assurance Test specialist, Assembly and Test Inspection unit, received a $159 cash award for his suggestion calling for the placement of plastic packaging material in the inspection area thus eliminating unnecessary handling of assemblies.

Hams Participate In Field Day

Amateur radio operators from the NRC Radio Club took to the field Saturday morning June 22, for a 27-hour demonstration of their ability to handle communications under actual field conditions in the annual Field Day sponsored by the American Radio Relay League.

Club members set up camp at the vacant Highland School site in Rancho Palos Verdes erecting tents, equipment, and string antennas. Three separate transmitting stations, one for single sideband voice, one for Morse code, and one for VHF, were set up all powered by emergency power generators.

Club Commissioner Bob Cobb reported that the NRC stations, using the call letters W6VPZ, contacted 1252 stations which was 404 more than last year. Some of the more distant areas reached were Quebec, Puerto Rico, Panama Canal Zone, Guam, Hawaii, and Alaska.

The Field Day is a test of disaster and emergency equipment that is participated in by hundreds of clubs and thousands of radio amateurs throughout the U.S. and Canada.

Participating from the Radio Club were, Rulon Bailey, John Eckert, Chuck Jenzen, Jim Jones, Jeff Kincaid, Doug Marston, Don Moore, Ben Russell, Jim Steinhardt, Jim Stouder, Bob Cobb, Fred Debose, Tom Grettum, Ted Ito, Horst Rick, and John Cashen.

Toastmasters Club Installs Officers, Receives Award

Northrop Toastmasters Club 212 installed its new officers at an awards ceremony and installation held July 10 with immediate past District I Governor Norb Schmidt conducting the installation.

Merit awards presented to the club and members included the International Toastmasters President's Distinguished Club Award for 1973.

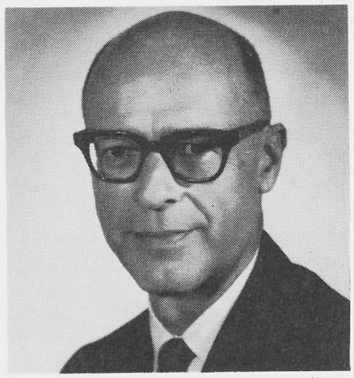
New officers are: Al McGowan, president; Ken Himes, educational vice president; Bert St. Gean, administrative vice president; Al Palumbos, secretary; Virginia Poole, treasurer; and JoAnn Witherspoon, sergeant-at-arms.

Softball Teams End First Round Play

The Rats, managed by Ray Latchford, fresh from a third-place finish in the first round of the NRC men's slow-pitch softball league, will meet the Raiders Wednesday, July 24, at 6:15 p.m. at Eucalyptus Park, Hawthorne, in second round action.

Two other Electronics teams, the Rogues managed by Lou Colombano, and the Roadrunners managed by Pete Weise, finished fourth and seventh, respectively, in the first round.

Members of the Rats in addition to Latchford are, Rudy Ohnersorgen, Bert Wellbaum, Joe Ray, Len Kaufman, Danny Kaufman, Chuck Chamberlain, Ben Andersen, Bill McNair, Dick Arnold, Roger Horn, Jerry Stevens, and Ed Subia.



WARREN Prentiss, senior writer, Reports and Graphics unit, Palos Verdes, was one of three Rotary Club bulletin editors who served as group discussion leaders at the Rotary District 528 Assembly June 21 at the Los Angeles Hilton Hotel. Prentiss was 1973-74 editor of the Palos Verdes Peninsula Rotary Club's weekly bulletin, El Rotacion, which was judged best among medium size clubs (47 to 70 members). He has been a member of the club since 1965.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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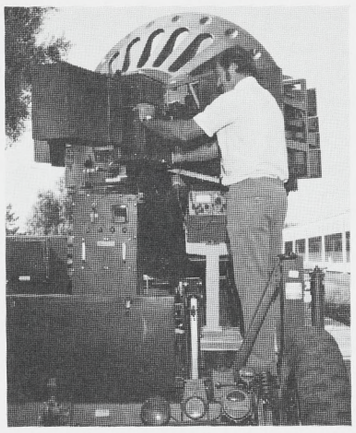


MEL PARRISH, left, and Paul Chey examine imagery being reconstituted on the moving window display in the AIDATS ground recording shelter, while on right, Al Garreffa conducts test on K-band radio receiver and frequency synthesizer on the ground antenna.

Net Income More Than Doubled in The Company's Second Quarter

Net income for Northrop for the second quarter ending June 30 was $4,671,000, more than doubling the $2,314,000 for the same time period a year ago, and according to David N. Ferguson, corporate vice president and general manager, the Electronics Division continues to contribute significantly to the health of the corporation.

"Contract acquisitions were on the increase during the first six months of the year particularly in the areas of electronic countermeasures and navigation systems," Ferguson said. Contracts awarded to the Defense Systems Division of Hallicrafters and the Navigation and Tactical Avionics departments of the Southern California operation contributed appreciably to the company's current order backlog which stands at $1,144,958,000 as of June 30, up 21.7 per cent from last year during a comparable time period.

The general manager noted that Northrop sales for the second quarter of 1974 totaled $210,367,000 as compared with $155,509,000 in the comparable period of 1973, an increase of 35.3 per cent, and were 11.2 per cent higher than first quarter sales of $189,132,000. Net sales for the six months ended June 30 were $399,499,000, 38.9 per cent higher than the $287,674,000 in sales recorded last year.

Earnings per primary share for the second quarter were $1.24 as compared with $.58 for the second quarter of 1973. Fully diluted earnings were $1.07 for the second quarter, as compared with $.50 for the comparable quarter last year.

(See EARNINGS, page 8)

GINNIE Wiggins is celebrating her 30th service anniversary with Northrop this month and heads a list of 28 service awardees. See story, page 8.

Travel Club Plans Hawaii Trip Meeting

The Electronics Division Travel Club has scheduled a kickoff meeting Aug. 22 at 7:30 p.m. at the Alondra Club on Prairie Avenue in Lawndale to discuss the yearend holiday tour to Hawaii.

The itinerary includes four islands, all transportation, sightseeing, hotels and five rounds of golf for the golfers. Tour price is $479 for non-golfers, $561 for golfers.

Contact Jeannie Zubak, Travel Club commissioner, Hawthorne ext. 542 for more information.

Division Receives Contract From U.S. Army for AIDATS

The Tactical Avionics Department has been contracted by the U.S. Army to complete the modification and test of the Army In-flight Data Transmission System (AIDATS). The first phase of the program had been administered by the Navy under a previous data link contract.

AIDATS uses an OV-1 aircraft equipped with a Side-Looking Airborne Radar for reconnaissance purposes. The radar video signal is digitally encoded and transmitted to a ground antenna where it is demodulated and reconstituted as photographic type imagery in real time. The uniqueness in the system is the extremely high resolution of the film imagery which must be suitable for reconnaissance image interpretation.

Speaking on the progress of AIDATS, Bob Cooper, project engineer, noted, "We have modified the system to all K-band transmission. Significant is the fact that Northrop designed, developed, and built the new K-band receiver, a wideband, state-of-the-art unit, which is a real 'first' for the Electronics Division."

Associated with the system is a new frequency synthesizer, used to create the K-band frequencies and an imagery display unit used to reconstitute the film imagery at the ground station.

Art Gandy, program manager, said the flight test activities are planned for the end of the year. "The ground antenna will be located near the top of the Palos Verdes Peninsula and the OV1-D aircraft will fly out of Hawthorne Airport manned by an all-Northrop crew." Previous flight tests had been conducted at Edwards Air Force Base.

"The program is financially sound, on schedule, and enjoys an unusually high technical performance rating with the customer, the Army Electronics Command," Gandy added.

Gandy also credited several key individuals with the technical success of the program including Bur-

(See AIDATS, page 8)

Computerized System Will Aid Blood Drive

An automated system for processing blood donor applications will be in effect for the September blood drives, according to Arnah Pakes, Medical.

"Northrop Data Processing has implemented the Electronics Blood Donor Pledge System to facilitate scheduling of appointments for people wishing to donate blood," Arnah said.

Personnel at Palos Verdes will receive computer punched cards with their paychecks Aug. 30 and Hawthorne personnel will receive their cards with paychecks Sept. 6.

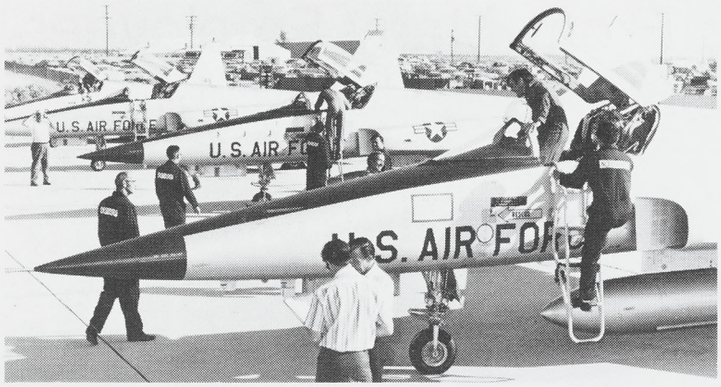
The Palos Verdes facility will hold its drive Monday, Sept. 9 from 9 a.m. to 1:30 p.m. followed by a drive at Hawthorne, Friday, Sept. 13, from 9 a.m. to 1:30 p.m.

STANTON FRIEDMAN

Management Club Meeting Features UFO Discussion

Featured speaker at the Management Club meeting Aug. 21 will be Stanton Friedman, noted physicist and lecturer discussing "Flying Saucers are Real." Social hour begins at 5:30 p.m. and dinner at 6:30 p.m. at Lococo's in Manhattan Beach.

Friedman is a leading proponent of the existence of flying saucers and has lectured on the subject at 93 colleges and universities in 29 states, and has appeared before the U.S. Congressional committee investigating unidentified flying objects.



CLIMBING ABOARD for final check flights before departure to Switzerland are Air Force pilots Lt. Colonel John Taylor and Maj. Robert Lilac, foreground. The two F-5E International Fighters are currently being evaluated in Switzerland by the Swiss Government as a possible replacement aircraft in its air force. Aircraft Division personnel pictured at Edwards Air Force Base are, from left, Don Mitch, John Ryan, Bob Cole, Dick Case, Dick Thomas, Ken Tarbell, Paul Waddell, and Mel Buengten. Photo by Sam Orr.

Defense Systems Department Receives Substantial Contracts

The U.S. Army Electronics Command at Ft. Monmouth, N.J., announced the award of a $6.2 million contract to Hallicrafters' Defense Systems Department of Rolling Meadows, Ill. Hallicrafters is a wholly owned subsidiary of Northrop.

The contract provides for the Phase II engineering development of an airborne Advanced Multiple Target Electronic Warfare System (MULTEWS).

DSD is teamed with American Electronics Laboratories in Colmar, Pa., for this 22-month activity to develop and fabricate two airborne Advanced MULTEWS prototypes for test and evaluation in a UH-1H Iroquois helicopter. The overall Advanced MULTEWS program objective is to fulfill an urgent U.S. Army electronic warfare requirement.

George Giacomino is manager, Technology Department, and Stanley Hanson was named MULTEWS program manager.

The Defense Systems Department also was awarded a $5.2 million contract from the AIL Division of Cutler-Hammer, Inc., for engineering development of portions of the U.S. Air Force B-1 Strategic Bomber electronic countermeasures system, Wallace C. Solberg, vice president and general manager, announced.

AIL, teamed with DSD, was awarded the prime contract for the B-1 Radio Frequency Surveillance/ECM System. The initial contract is part of a larger total program for development of the ECM system.

The new contract provides for development of transmitters for the B-1 electronic countermeasures ECM subsystem. Other potential engineering activities include the development of additional transmitters and AGE, as well as the fabrication of additional prototypes.

Frederick Childs headed up the successful DSD proposal and program management teams that resulted in two prior contracts from AIL. He will continue as B-1 ECM project manager.

UH-1H IROQUOIS helicopter showing the Advanced MULTEWS radar warning receiver antenna suspended below and side-mounted radar ECM transmitting antenna mounted on each side. Remainder of the system is installed internally.

BSL Medical Data Systems Go To Hospitals and Laboratories

Berkeley Scientific Laboratories, a leading manufacturer of medical data systems and a Northrop subsidiary, has been awarded a contract for a CLINDATA™ 750 System by the University of Alberta Hospital in Edmondton, Alberta, Canada; sold a CLINDATA 700™ System to the Long Island College Hospital, Brooklyn, N.Y.; and recently delivered a CLINDATA 200™ System to the Falzone Medical Laboratories of Lincoln Park, Mich.

The University of Alberta has been using a BSL CLINDATA 450 System for the last three and one-half years. The 750 will provide added benefits to the hospital by utilizing the newest hardware configuration and incorporating subsystems for blood bank, microbiology and nuclear medicine. This marks the first time a "tissue transplant subsystem" has been incorporated as a part of a clinical laboratory computer system. The transplant subsystem will allow the hospital, one of the largest in North America, to keep a record of all patients waiting for transplant-organs, and will provide vital statistics associated with each patient. Installation is scheduled for May 1975.

Installation for the Long Island College Hospital CLINDATA 700 System is scheduled for the first quarter of 1975. It features a special program designed specifically for the hospital, enabling the staff to use the system for billing and preparation of insurance forms.

Utilizing the latest advances in medical data processing, the 700 offers a complete range of automated methods for handling test requests, collecting specimens and acquiring and processing all types of results. All laboratory sections can use the system for storage, retrieval and status, and result reporting.

The CLINDATA 200 System for the Falzone Medical Laboratories is designed to acquire data automatically from on-line instruments, to allow input of manual data via consoles, and to print out complete patient reports. Specimen data is processed from initial test request through on-line result acquisition to the automatic report printout.

Through total automation of the laboratory operation, the system offers reduced turnaround time for patient reports while improving their clarity and quality.

Victoria Branch Joins Communications Staff

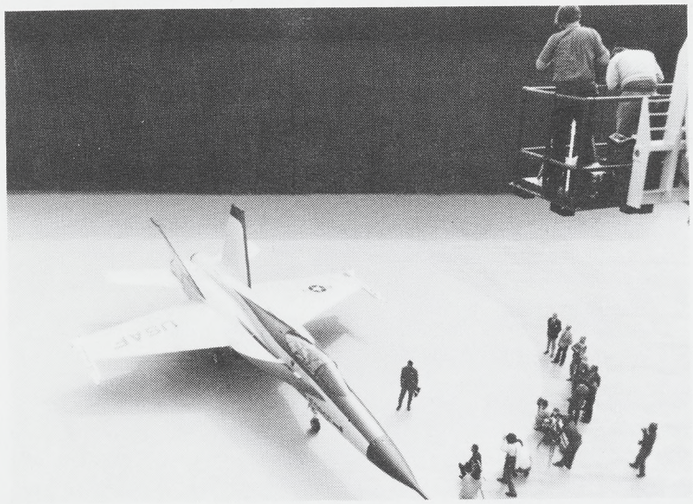
Victoria Branch has joined the Corporate Communications staff as manager of Editorial Services.

Ms. Branch comes to Northrop from Litton Industries where she managed the Los Angeles-based western regional news bureau and edited the investor relations' quarterly publication. Prior to working at Litton, she was director of publications at the Firestone Group and editor for the Sportsman's Handbook.

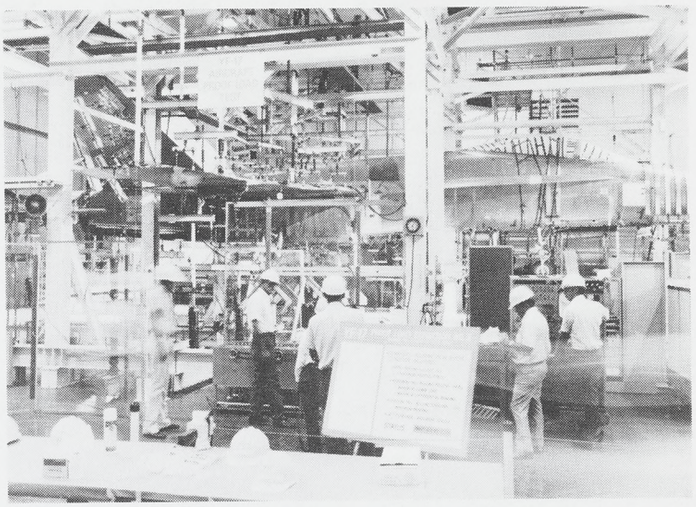
Ms. Branch received her B.A. degree in English from Mt. St. Mary's College and an M.S. degree in journalism from UCLA.

THIS UNUSUAL building in Abidjan, Ivory Coast, is another outstanding example of the use of Northrop Architectural Systems Arcadia products. The Arcadia windows were supplied by STEP (Societe D'Etudes et de Prefabrication Siege Social et Usine) and installed by Mischler Ivory Coast. NAS products are used worldwide.

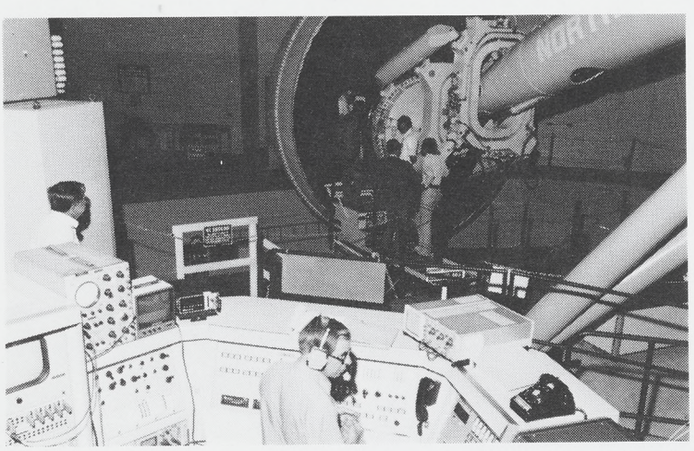
YF-17 Prototypes Get Help From Many Employees



GETTING THE picture isn't as easy as aiming the camera and clicking the shutter as these photographers will agree. From jockeying around for a good angle on the ground like Larry Simpson, Ed Reilly, Bill Kelley, Nate Callahan, Jim Haddow, and Dave Saldana are doing, to going aloft for the right angle like Bob Thornton and Bill Anneman, the Graphics Department has met every challenge while covering the YF-17 program. Photo was taken by Dick Engler positioned on an adjacent lift aloft.

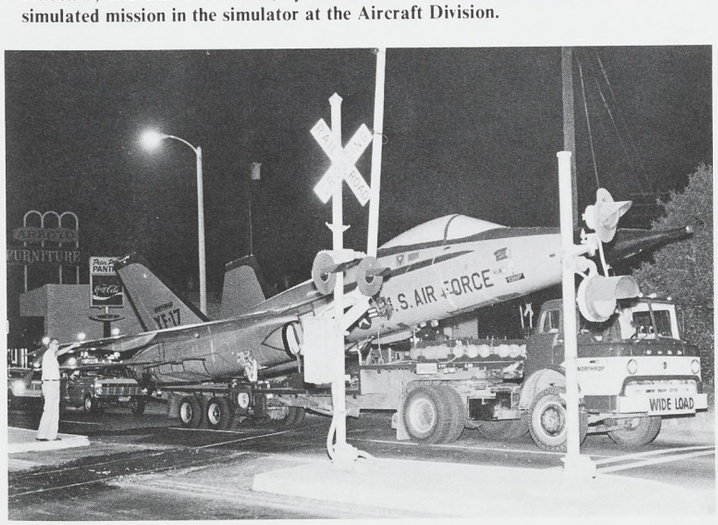


BOTH YF-17 prototype aircraft underwent flight simulation through static proof loading by the Structures and Dynamics Laboratory at Hawthorne. Almost 11,000 man-hours were involved in the preparation and testing of each prototype. Personnel pictured from left are Denton Wick, Harold Hough, Sherman Lew (partially obscured), Jesse James, Don Enno and Mike Phillips. No. 2 prototype aircraft (in picture) arrived at Edwards Air Force Base July 30.

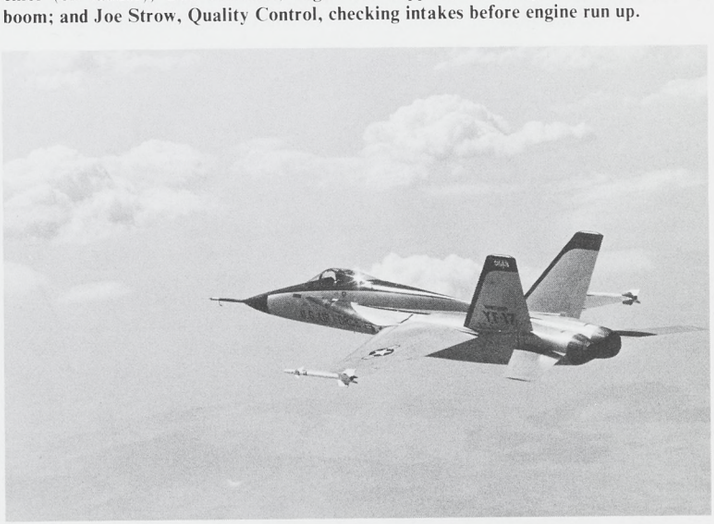


PRIOR TO flight testing of the YF-17, Joint Test Force pilots had to check out in Northrop's Large Amplitude Flight Simulator which was programmed to the flight characteristics of the highly advanced technology fighter. Here, lead engineer Ralph Hubbard, and Bill Greenwood, operator, make final preparations prior to another simulated mission in the simulator at the Aircraft Division.

GROUND CREW of No. 1 YF-17 prototype aircraft at Edwards Air Force Base performs final checks preparatory to test flight with Lt. Colonel Jim Rider, USAF, head of the Joint Test Force pilots, at the controls. Pictured are Ed Gant, crew chief (on ladder); Bob Herriott, flight test support, removing cover from test boom; and Joe Strow, Quality Control, checking intakes before engine run up.



DISTRIBUTION Services delivered both YF-17 prototypes on schedule to Edwards AFB for flight testing and evaluation. Loading and unloading of the aircraft was handled by the Transportation personnel. Carefully planned routes were taken to insure safety and minimal encounters with highway traffic.



MAJESTIC portrait of the very high performance YF-17 prototype was taken by Northrop's chief test pilot Hank Chouteau from chase plane. YF-17 has logged more than 60 flights thus far in the test and evaluation program at Edwards AFB being conducted by a joint test force team.

FOR EVERYONE, YOUNG AND OLD

All-Northrop Family Picnic Promises Fun

The All-Northrop Family Picnic, sponsored by the NRC and hosted by the Aircraft Division, will be held this Sunday, Aug. 25, from 10 a.m. until 6 p.m. at the Los Angeles County Fairgrounds in Pomona.

"Summer Fun at 1940 Prices" is the theme for the picnic according to Jim Jones, vice president, Aircraft NRC, and admission and parking are free. "For just five cents you can enjoy any of the rides in the amusement area or purchase refreshments for the kids such as ice cream or coke. Beverages for the adults are also available at old-time prices," he said.

Softball diamonds, a children's play area, and ample picnic tables are also available, according to Jones, and families are urged to bring an old-fashioned picnic lunch.

Featured events for the day include a Supervisor's Chug-a-Lug contest, two hours of bingo games, a teen dance contest featuring the music of "US", a magic clown and characters from Disneyland, Knott's Berry Farm and Magic Mountain, and the first annual grand prix tricycle race pitting super modified entries from each division of the Southern California operation, in a relay race for trophies. Special entertainment highlight will be authentic Indian dances performed by the American Indian Dancers featuring Northrop's Ralph Coonfield, who is a Cherokee and Choctaw Indian.

A bundle of door prizes are on tap including a 1974 Pinto Runabout, a complete king-size waterbed set valued at $450, fun package weekends for two to Las Vegas, San Diego, and Catalina, a full set of Gene Littler golf clubs and bag valued at $250, Texas Instrument pocket calculators, a dozen of the new fun game Rrib-bit, a set of automobile shock absorbers, and many more items.

Door prize tickets priced at $1 will be sold at the picnic and may be purchased by any active or retired Northrop employee, Air Force personnel, or foreign representatives currently assigned to Northrop. Each ticket sold will help pay for the picnic.

"NRC volunteers from Electronics, Ventura, and Electro-Mechanical divisions are assisting the Aircraft organizers in putting on the picnic. This is the one chance during the year that the entire Northrop family can get together like this for a day of fun," Jones concluded.

To get to the fairgrounds, take the San Bernardino Freeway east to the Ganesha Blvd. turnoff and follow the signs to the fairgrounds parking lot.

EAGER MEMBERS of the Electronics Division recently 'rolled out' their super modified entry for the annual Grand Prix Tricycle Race to be held at the All-Northrop Family Picnic this weekend. Dennis Mahaney is shown applying some advanced technology to the vehicle while driver Tom Kornegay, and Jo-Ann Leon-Guerrero exude confidence of an Electronics Division victory.

Historically Speaking . . .

NORTHROP'S C-125 Raider was a three-engined assault transport. It was larger and heavier than World War II's most widely used multi-engined aircraft and was capable of landing at minimum weights on improvised airstrips little larger than a football gridiron. The USAF placed an initial order for 23 Raiders. Thirteen of the planes were devoted to tests as light assault transports. Ten were equipped with ski and float landing gear for use in Arctic rescue operations. The C-125 had a rectangular fuselage and an under fuselage cargo door large enough to admit vehicles up to nine feet wide and six and one-half feet high. The Raider had the ability to land at low weight with a ground run of only 350 feet and to take off with a 500-mile fuel supply after a run of only 580 feet. Use of the three engines and reversible-thrust propellers provided the C-125's agility.

Wingspan: 87 feet ***Length: 67 feet***

Engines: Three 1200 h.p. Wright R-1820 ***Weight: 19,662 pounds empty 32,500 pounds gross***

Who's Who Lists Former Employee

Arthur DeVany, a former employee of Northrop who has recently retired, has been listed in the Who's Who in the West, fourteenth edition, 1974-75.

Three papers authored by DeVany are:

Testing the Sphericity of Short Radii Convex Surfaces, which was published in February 1974; Laser Diverging Ball-Bearing Source, published in March 1974; and The Eight-Way Classification of Interferometric and Interferential Fringes, to be published this month.

VERNON CARLSON with his son, Curtis, who has been awarded the rank of Eagle Scout during a Court of Honor.

Eagle Scout Rank To Curtis Carlson

Curtis Carlson, 16-year-old son of Vernon W. Carlson, Tool Accountability and Tool Storage, Aircraft Division, has been awarded the rank of Eagle Scout during a Court of Honor held in June.

Curtis, a senior at Downey High School, organized his troop to work at Downey's Wilderness Park for his Eagle project and earned nine merit badges in addition to the required 11 for the Eagle ranking.

A member of the Order of the Arrow, Curtis has served as a patrol leader, instructor, den chief, and junior assistant scoutmaster. He achieved his Eagle rank in the minimum time, three years, required by the Boy Scouts.

Northrop Institute Plans To Hold Evening Classes

The Northrop Institute of Technology is planning evening courses to help Northrop employees who want to continue on at the institute to complete their bachelor degrees, or for those who wish to attend but cannot because of their work schedules.

All Northrop employees who wish further information should contact Ralph Bent, director, Admissions and Records, (213) 776-3410, ext. 49.

Ice Follies Night At the Forum

Personnel Activities has lined up another Northrop Family Special. It is the all-new Shipstad and Johnson Ice Follies to be held at The Forum, Tuesday, Sept. 10, 8 p.m.

Regular price for the Ice Follies is $6.75. Employees' price, $3.50.

As the drawing at the right depicts, it will be a spectacular show with Janet Lynn, American champion, World and Olympic medalist, leading the skating parade. Richard Dwyer, who joined the Ice Follies 25 years ago, headlines the regular skaters. There will be comedians aplenty and for the children there are the Muppets and other characters from the TV show "Sesame Street."

Remember the deadline for tickets is Aug. 30.

Ambassador Tour Set

The Northrop Recreation Club is presenting The Ambassador Tour of Europe 1974 for all divisions.

Departing date is Sept. 8 and return Sept. 24 visiting England, Austria, Holland, Italy, Germany, Switzerland and France. Most meals are included in the fully escorted tour for the price of $976 using scheduled airlines.

For an application form and detailed brochure, contact Personnel Activities offices.

Catalina Art Festival Package of Fun Offer

The Northrop Recreation Club is offering a package of fun at the sixteenth annual Catalina Art Festival, Saturday, Sept. 21.

Departure time is 8 a.m. from Queens Way Landing Long Beach via Long Beach Catalina cruises. The boat will arrive at Avalon at approximately 11 a.m.

The price of $16 per person includes round trip transportation to Catalina, tram fare and lunch at the Avalon Country Club.

Because space is limited, reservations and money must be at the Aircraft Division Personnel Activities office by Sept. 10. Contact Cathy Paris, ext. 2486.

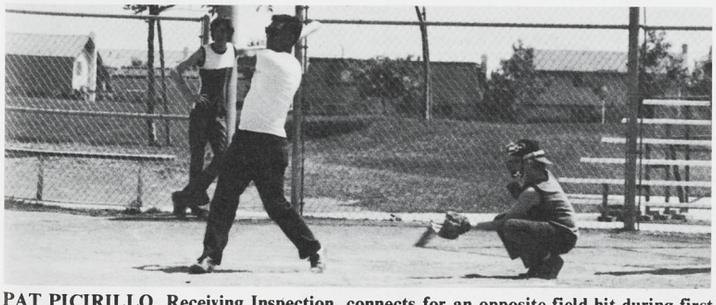
Mariposa Picnic Turnout Good

"The Spirit of 7300" was the theme of the Mariposa picnic as departments within the Mariposa facility got together for their annual picnic held July 20 at El Cerritos Park.

Highlight of the day-long event was the challenge softball doubleheader pitting Receiving Inspection against Off-Site Inspection. When it was over, Receiving had swept Off-Site, 17-5 and 4-0, with pitchers Jim Brown and George Nosacka picking up the respective victories.

Sam Vernola, manager, Off-Site Inspection, said, "The enthusiastic participation of everyone this year resulted in the most enjoyable picnic yet. The large turnout by teammates and their families exemplifies the togetherness attitude that also prevailed on the job. I personally want to express my gratitude to all those who made this event so successful."

Vernola added specific thanks to Dick Economy, Mr. and Mrs. Harley Foster, Roy Saunders, Don Hedley, and Jack Parron, who were responsible for securing the site and coordinating the picnic.



PAT PICIRILLO, Receiving Inspection, connects for an opposite field hit during first game of doubleheader against Off-Site Inspection team. Catcher is Bob Nutter. Jim Brown awaits turn at bat. Receiving won both games to keep perpetual trophy.

Carey Leads Band At Angels Stadium

William J. Carey, Electro-Mechanical Division Manufacturing Engineering, was bandmaster for the El Bakal Shrine Band that presented a pre-game concert and played the National Anthem at the Northrop Night at Angels Stadium on Aug. 16.

Carey has been a concert bandmaster for more than 30 years, starting in high school in New York state. Later he turned professional, leading a touring band that played throughout the New England states.

Today he continues his professional music making at night and holidays. In addition to his work with the Shrine band, he also leads specialty organizations such as a German band, a dance band and a rock and roll combination.

Sironi Has Biggest Little Orchard in Normal Backyard

Ed Sironi, Northrop Architectural Systems, has the biggest little orchard you'll find anywhere.

Or maybe it is the littlest big orchard.

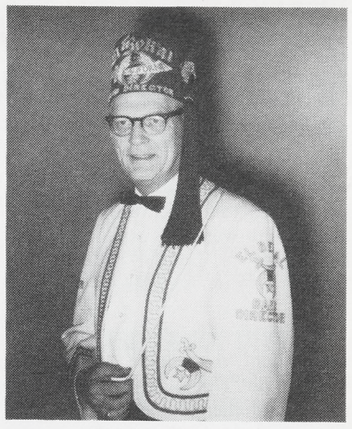
Anyway he has managed to place about 25 varieties of fruit trees and berry bushes into the normal backyard. The way the varieties are staggered he is assured of fresh homegrown fruit or berries for an average of 10 months of the year.

This probably sounds like quite a supply of fruit, but with four teenagers in the family it is sometimes difficult to save some for preserves and jellies.

His trees include lemon, navel orange, lime, tangelo, grapefruit, fig, walnut, peach, plum, nectarine, avocado, apple, apricot, pear, guava-pineapple, and guava-strawberry. His berry bushes include currant, riber grape, boysenberry, concord grape, strawberries, Tokay grapes, Thompson seedless grapes, raspberry and elderberries.

Since his backyard is a sharp downward slope, he solved the problem of trees cutting off his view of the mountains by careful placement. The first row of trees along the edge of his patio are dwarf variety. He then planted the tallest trees at the bottom of the slope and intermediate sizes in between. The apparent height, as viewed from the house is about the same.

His first fruit matures in May and other varieties become ripe each month through February, leaving only March and April when the big little orchard is not producing something for the table.



WILLIAM CAREY

Flutist on His Way In Music World

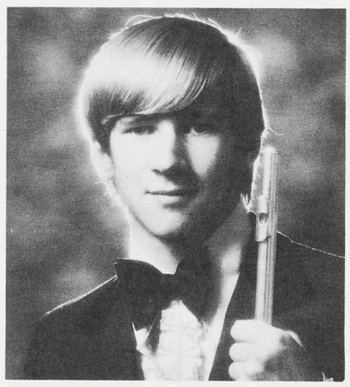
Bradley Cain, who will enter his senior year at Neff High School, La Mirada, is a young man on his way in the world of music.

The son of Elmer Cain, engineering specialist, Aircraft Division Avionics Systems, he made his debut with the La Mirada Symphony at age 12. His mother is principal flutist with the symphony and he performed with her the Vivaldi C Major Concerto for Two Flutes. He is now a member of the symphony orchestra.

Brad recently won first place in his category in the Southern California Junior Bach Festival. During the past six years, he has won awards in the Young Artists Guild of the Music Teachers Association of California programs at both regional and state competition. He has been named a member of the MTAC.

In addition to his successful performances in serious music, he has a secondary interest in jazz, being a member of the Jazz Combo "What Four."

Brad has been on the principal's Honor Roll since his freshman year maintaining a 4.0 grade average. His favorite sports are swimming and fishing.



BRADLEY Cain, member of the La Mirada Symphony Orchestra.

Watching Old Movies on TV Is Like Going Back to School

When Bill Riesch, Electro-Mechanical Division timekeeper, watches old movies on TV it is like going back to school. He often sees actors who were his students when he taught in Long's Professional School in Los Angeles during the 1930's.

"Usually when a teacher sees an old student years have passed and the kids don't look anything like we remember them," Bill said. "But when I see mine they look just exactly the same — thanks to the old films — as when I taught them."

He joined the school's teaching staff after graduating from UCLA in 1936. Its students were professional entertainers who could not easily attend regular school classes.

He usually had about 20 in a class and the subjects he taught included social studies, English, arithmetic and Spanish.

"I had heard how snotty professional children were supposed to be," Bill said. "But it just isn't so. I've never found a nicer group of children. They came from all phases of show business. Some were in vaudeville. Some were dancers. Some were actors. It's hard to recall all their names after 38 years, but I particularly remember Bobby Jordan, Leo Gorcey, Huntz Hall of the Dead End Kids and Marcia Mae Jones."

Teaching in a professional school is somewhat different from teaching in a public school, he found. "You had to be a little more lenient," he said. "We had to consider that the children were both going to school and working at the same time. Occasionally they would miss some days due to commitments. Then we worked with them individually to make up the lessons."

After leaving the professional school, Bill taught in the Los Angeles school system and then went into financial work with the Bank of America and the Federal Reserve System before joining Northrop 19 years ago.

Since leaving teaching, he has only met one of his former students in person. This was on Saipan in 1944 when he was with the Air Force during World War II. One of the girl dancers with a USO troupe had been his student at Long's.

"But I still see them occasionally in these old TV movies," he said. "And that's better — for they are still just like I remember them."

BILL Riesch poses with one of his former students he met on Saipan Island.

Owner of Lost Lens Finds News Ads Helpful

It is not unusual to find your pocketbook flat after attending a horse race, but George Steiner, 83-year-old Northrop retiree, found a prescription lens in his.

It happened after George returned from a Northrop Day at Hollywood Park on June 15, which he attended with his daughter-in-law, Elaine Steiner, secretary at the Electro-Mechanical Division.

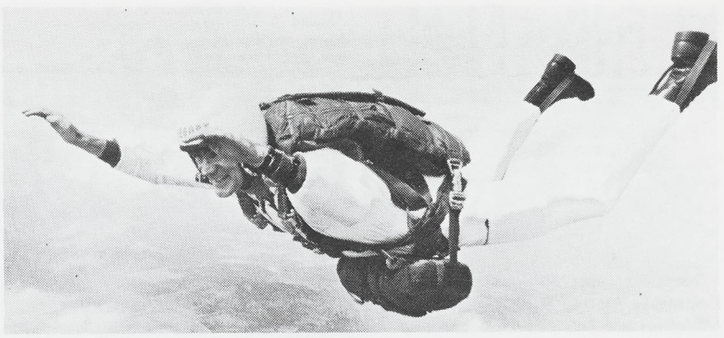
The lens had popped out of the glasses of a woman spectator sitting behind the Steiners at the race. In flying through the air it slipped into George's back pocket and into his billfold. They helped the woman look for it, but no one had seen where it landed.

After the lens was found that night, the Steiners did not know who the woman was, but assumed she was from Northrop. Mrs. Steiner placed an ad in the Northrop News Classified Ad section asking that the "lady w/white boots and green shirt" call her.

Within minutes after the paper appeared, the phone of Rene Cassatt, Aircraft Division statistical analyst, started ringing. Friends were calling to say, "That white boots and green shirt must be you!" And it was.

"I was very pleased to get the lens back," Rene said. "I was carrying the glasses on a chain around my neck and Willie Shoemaker was coming down the stretch with my money riding on him. I guess I got a little too enthusiastic. My jumping up down dislodged the lens. Everyone was very helpful in helping me look around for it, but none of us thought to look in each other's pockets!

"The fact that Northrop people found it and used the Northrop News to return it to me bears out what they used to say during the NorAid campaigns, 'Northrop takes care of its own!' "



AUTHOR HOWARD Gregory demonstrates spread position while free falling high above California. Gregory's book, 'Parachuting's Unforgettable Jumps,' is the first book that deals with the development of parachuting from wartime to the present.

'Parachuting's Unforgettable Jumps' Traces the History of Parachuting

Howard Gregory, corrective action analyst, Mariposa, may not have been a pioneer in sport parachuting but he has certainly done his part to give the rapidly growing sport exposure.

Gregory worked for 10 years to research, document and bring together all the history of the sophistication of parachuting through its emergence as a weapon of war to its present day.

In his book, "Parachuting's Unforgettable Jumps," Gregory has gathered the accounts of famous jumps by some famous celebrities along with stories of heroism during times of war. Also included are stories of the uses of parachutes.

Second Edition

"Parachuting's Unforgettable Jumps" is the second edition of Gregory's first book, "The Falcon's Disciples." Both books are read by parachuting trainees at the U. S. Air Force Academy and West Point.

Though he hasn't made a jump himself in over a year, Gregory is an accomplished chutist and a paratrooper from WWII.

A frustrated author who had tried writing short stories, a novel, and even a screen play, Gregory found the winning combination through years of searching through military records to study the beginnings of parachuting, and then through exhaustive travels to learn from professional skydivers.

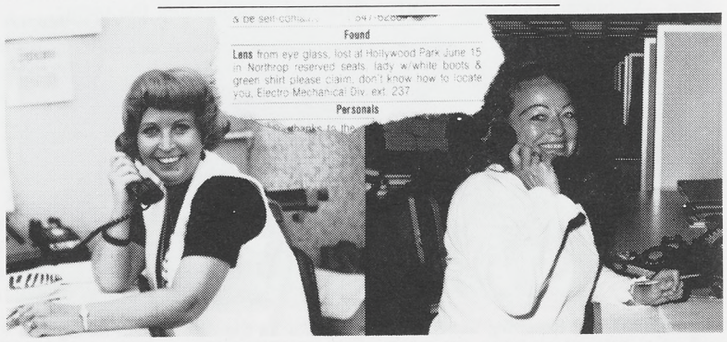
"When you tell someone at a social gathering that you're a skydiver they look at you kind of strange and usually follow with the usual. 'Have you always had suicidal tendencies?' As far as risk is concerned, if done properly, skydiving is less hazardous than skiing," he explained.

In his book, Gregory has gathered over 200 of the best photographs ever taken of parachuting. "I am really appreciative of the cooperation given by professional photographers for their contributions and the Army, Navy and Air Force for the pictures of their precision parachuting teams. Thanks also to the Ventura Division for contributing pictures of earth landing systems used by all American astronauts," Gregory said.

Gregory has undertaken his venture into novel writing by publishing his work himself. He formed Howard Gregory Associates.

His book has since become required reading at the University of California's beginning parachuting course.

"I don't believe that the book is really a special interest book," Gregory emphasized. "Anyone with any adventure in their soul could enjoy 'Parachuting's Unforgettable Jumps'," he concluded.



RENE CASSATT, right, the lady who lost the lens from her glasses, calls the extension listed in the classified ad in the Northrop News and talks to Elaine Steiner.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to one per family. Deadline is Monday of the week preceding publication.

Vehicles For Sale

Pickup, 1970 Toyota, AM/FM, step bumper, $1475. 213-325-8932.

Porsche, 1965, AM/FM, disc bks., extras, $4195. 213-545-8756.

Truck, 1960 Chevrolet, ½-ton, 6 cyl., std. trans. $300. 213-676-0432.

El Camino, 1967, 327, auto., p/s, a/c, air shocks, $1200. 213-376-6119.

Truck, 1966 Chev., w/camper, $500. 213-675-3254.

Ford, 1964 Falcon, auto. trans., $150. 213-542-6436.

Rambler, 1968 Sedan American, needs starter, $200. 213-943-0657.

Honda SL 100, 1972, many extras, $350. 213-323-4979.

Fiat 850, 1971 sports cpe., $1400. 714-595-2140.

Datsun 240Z, 1971, 25,000 mi., stereo tape, new steel-belted tires, $4000. 213-374-2915.

Motorcycle, 1970 Harley Davidson Sportster, lots of chrome, stock or 8" over stock front end, $1600. 213-530-0438.

Mercury, 1973 Comet, 4-dr., 302, AM/FM multiplex stereo sys., p/s, a/t, a/c, $3295. 714-531-8845.

Austin Healey, 1959 100-6, $975. 213-679-5462.

Continental, 1967, 46,000 mi., fully equipped, $995. 213-838-4835.

Chrysler, 1969 New Yorker, 4-dr., p/s, p/b, p/win. p/seat, a/c, $975. 714-968-7987.

Van Conversion, 1969 Ford Econoline, raised roof, sleeps 4, self-contained, r/h, many extras, $2400. 213-886-1634.

Mercury, 1966 Colony Park wagon, 3-seat, full power, air, 410 eng., $650. 213-378-6415.

Volkswagen, 1968 1500, 5000 mi. on reblt. eng., $1050. 213-325-8185.

Honda 90 dirt bike, many extras, $175. 213-375-8330.

Suzuki, 1973, 185 cc Enduro, 730 mi., 5 mos. on warranty, $825. 213-413-2625, 213-438-8902.

Plymouth, 1971 Cricket, 4 cyl, 4 spd. std. trans., r/h, $1295, 213-676-5890.

Tractor, Bolens Midget 10, pwr. shovel on front, pwr. tiller on rear, 6 forward spds., 2 reverse, elec. starter, w/flatbed trailer, $950. 213-378-8017.

Honda 305 Scrambler, w/basket, $85. 714-894-2337.

Datsun 510, 1972 wagon, 22,000 mi., 4 spd., AM/FM, $2250. 213-530-7573.

Suzuki 185 TS, 1973, 1800 mi., $625. 213-320-4243.

Buick, 1970 Skylark custom 2-dr., h/top, 350-4 V-8, full power & air, $1895. 213-346-6675.

VW Campmobile, 1974, used 4 wks., 5000 mi., pop-top, stove, refrig. $5400. 213-348-0892.

Yamaha, 1969, trail & street, extras, tools & custom helmet, $250. 213-973-8978.

Miscellaneous For Sale

Aquarium, all equip. incl. Gulf of Mexico shells, 20 gal. size, $20. 714-633-5282.

Pup, small miniature poodle, AKC, $50. 213-866-4104.

Dishwasher, Kenmore 1 yr. old, use as portable or bltin, $150. 213-641-6419.

Wedding Gown, trad. bouff. white chant. lace, dble. tier veil, long pointed sleeves edged in pearls, size 8, $100. 213-636-5539.

Transmission, 1964 Chev. Cruismatic, shop reblt., never used, $90. 714-549-0629.

Sofa, 9' & 7' long, $125 other misc. items. 213-672-0664.

Ski Boat, 14' 45 h.p. Mercury outbd., Javelin-type hull, $950. 213-531-8703.

Grinder-polisher, 6" gem making unit, other access., $300. 213-320-8559.

China, Noritake Hermitage pattern, 8 pl. setting, 11 serving pcs., $100. 213-823-5526.

Miscellaneous For Sale

Sewing Machine stand, fits any model, tubular steel, $5. 213-545-0449.

Bicycle, 10-spd., boy's, $60. 213-397-6490.

Poncho, South American hand-made Maxi, $37. 213-542-8497.

Outboard, boat motor, 350 Mercury, $125. 213-944-3794.

Hardtop for TR-4, TR-250, $75. 213-675-1000.

Bar Stools, 2 30" hi. w/backs, orange & cream vinyl, chrome legs, $20. 213-320-6657.

Sailboat, Sabot, all equip. incl., fiberglass, $200. 213-378-9660.

Desk Chair, swivel, exec. solid walnut base, $50. 213-676-3050.

Comb, Purr detangler, $10. 213-534-1974.

Crib w/mattress, $35, other items, various prices. 213-360-7230.

Train Systems, Model N postage stamp, complete, locomotives, rolling stock, power packs, track, access., $100. 213-679-0876.

Baby Buggy, imported, collapsible, use as car bed, $60. 213-377-5724.

Trashmasher, Whirlpool, never used, $150. 213-376-2127.

Rugs, 2, wool, 9 x 12, $30 ea. 213-327-6918.

Toilet, used, & lavatory sink, $30. 213-379-4517.

Camera, Canon Canonet QL17, used three times, $75. 213-372-4691.

Chain Saw, power, 14" blade, 1 h.p., $120. 213-833-7819.

Drapes, 3 sets, used once, red w/white, $30. 213-924-4198.

Dress Form, Sears size B, $15. 213-831-1745.

Boat, 18', wood, fibreglassed, bltin. bait tank, 40 h.p. Johnson outbd. motor, other equip., trailer, $1795. 213-371-4341.

Mattress, 52" x 74" for hide-a-bed-type sofa, $10. 213-679-6982.

Car Seat, child's Olive Petterson, $10. 213-530-5884.

Bass Drum, Ludwig, & chrome snare, w/pedal & stand, $150. 213-672-0855.

Vacuum Cleaner, tank-type, rarely used, $30. 213-326-6200.

Guitar, elec., 6-string w/Esty amp., $85. 213-328-1054.

Air Conditioner, window-type Mathis, 9500 btu, $50. 714-821-9144.

Vacuum Cleaner, Eureka upright, Mo. 260A, $30. 213-377-3806.

Player Piano, elec. motor driven, bench, music rolls, $425. 213-329-4090.

Coffee Table, marble top, 42", round, $40. 213-325-2292.

Parakeets, various colors, $2.75 ea. 213-421-9949.

Range, 1970 G.E. elec. avocado, 36' oven, $150. 213-830-5349.

Washer, Whirlpool, & gas dryer, $100 pr. 213-377-3858.

Pups, Afghan, 8 wks., AKC, $150 & up. 714-536-2445.

Communication Receiver, Hallicrafters, SX 130, earphones, spkr., crystal calibrator, $95. 213-599-7009.

Car Cooler, Polar, plugs into lighter, $20. 213-323-5740.

Bicycle, boy's 3-spd. Senator, $30. 213-323-8089.

Camper Potti, Corlon portable w/chemical flush, $25. 213-679-6672.

Vest, water ski-type, ladies, Cut N Jump, $21. 213-371-7657.

Humidifier, used once, $30. 213-644-4039.

Violin, w/case, $25. 213-324-4817.

Dining Room Set, 4 chairs, 48" round table, white Chippendale w/green textured fabric, made by Cal-Asia, $395. 805-498-3036.

Couch, 2-pc. sectional, 9' & 6', avocado & gold, $80. 213-370-3821.

Bed, dble., & headboard, reblt. box springs & mattress, 1 yr. old, $40. 213-644-7079.

Dinghy, 8' fiberglass w/tender, never used, $125. 213-675-3434.

Motorcycle Carrier, clamps to bumper, chrome plated, for up to 300 lbs., $12.50. 213-645-1489.

R.C. Gliders, Amigo II, monocoated, ready for radio, $60. 213-377-2543.

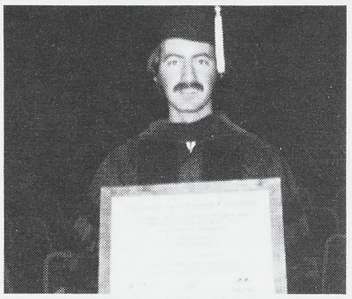
Degree in Pharmacy from USC to Stanley Hoffman

Stanley Hoffman, son of Frank Hoffman, Aircraft Division Production Welding Department foreman, has received his doctorate degree in pharmacy from the University of California School of Pharmacy.

Stanley has attended USC since he graduated from Pius X High School of Downey. During his years at the university, he has maintained a grade point average of 3.15. He is a member of the Rho Chi Honor Society, a national pharmacy organization representing scholastic achievement and honor.

He has successfully completed the California State Board Exam and has secured a position as staff pharmacist at the Tustin Community Hospital.

His father is a 33-year veteran of Northrop having started working here in 1941.



STAN HOFFMAN

Miscellaneous For Sale

Love Seat, La-Z-Boy, lt. blue velvet, never used. $250. 213-377-0669.

Stereo, Kenwood, 140 W. AM/FM tuner-amp., turntable w/smoked cover, & Sony cassette deck w/ dolby. $450. 714-994-3595.

Breakfast Nook, 4' x 6' L shape, matching table & chair, green vinyl, $75. 213-423-1363.

Carpeting, green, lge. piece, $85. 213-322-4173.

Life Preservers, 2 adult, buoyant, U.S.C.G. approved. $3 each. 213-545-7952.

Sewing Machine, industrial-type, Singer, model 400W1, single needle, new motor, table & stand, $275. 213-321-6120.

Trundle Bed, 2 mattresses, black & red plaid, $80. 213-376-2324.

Desk, modern, blond finish, $75. 213-653-7591.

Surfboard, 6'10" roundtail, $45. 213-374-8608.

Washer/Extractor, Hoover portable, gold, $150. 213-370-9119.

Television Magnavox, b&w, 2 pcs., & Hi-Fi, $95. 213-323-2289.

Airplane, BD-5 certified, delivery No. 453, $600, $4000 on delivery. 213-455-1411.

Stereo Console, Stromberg-Carlson, 3 pc. custom blt. maple cabinets w/Garrard record changer, $150. 714-529-8960.

Tires, set of 4 718-14, Goodyear custom pwr. cushion belted, off new car, $55. 213-938-8374.

Tape Deck, Panasonic, record, playback, 8-track stereo cartridge, Heathkit stereo amp & FM tuner, $100. 213-633-3993.

Camper, Tropicana, 8' o/cab slip-on, butane stove & oven, ice box, sleeps 4, approx. 6 yrs. old, $800. 213-330-8616.

Table, yellow wrought iron, glass top, & 4 chairs, $250. 213-530-3197.

Bedroom Furniture, girl's custom, $300. 213-377-6648.

Refrigerator, compact bar-type, walnut finish, 34x24x18" Coldspot, $85. 213-378-2127.

Travel Trailer, 17' Norris, sleeps 6, self-contained, pressurized water, 115V/12V. elect., $995. 213-378-7846.

Dishwasher, Whirlpool Deluxe Imperial 90, 2-spd., 6-cy. 3 yrs. old, used 1 yr., $100. 213-375-8627.

Wanted To Buy

Life Raft, 2-man, used, w/paddles. 213-451-3658.

Tent-Trailer, small. 714-837-2981.

Milling attach., for Atlas 12" lathe. 714-894-9517.

Free

Dog, 3 yrs. old, sheltie & cocker female, loves children. 213-676-1580.

Kittens. 213-925-7658.

Skin and Scuba Diving

A drive is on to reactivate the Skin and Scuba Diving Club. All employees interested in restarting or joining the Northrop Diving Club should contact Harry Cromer, Aircraft Division ext. 4075.

Books Wanted

Paperback and hard cover books for lending library for Northrop personnel on overseas assignments. Mail to Orgn. 8850, Zone AH, or call R. M. Brown, ext. 4004, Aircraft Division. Will pick up.

Rentals Wanted

Roommate wanted, 3-bdrm., 2 bath, on the beach, furn., gar. $167 mo. 213-545-1562, 213-545-0453.

Personals

We wish to thank our friends at Northrop for the cards & sympathy at the death of our mother & grandmother, Mae E. Ivy. THELMA & DENNIS CHAMBERS & DIANE BOBBITT.

My sincere thanks to all my friends at Northrop for the hospital visits, cards, flowers, phone calls & gift during my recent illness & recovery. LEON PERALDO.

Mr. & Mrs. Stewart Luce & family wish to thank our friends at Northrop for the beautiful flowers & condolences on the death of our son, Kenneth.

Thanks to all who helped make my retirement luncheon party such a memorable occasion & for the very nice & useful gifts. RUTH LINDQUIST.

We wish to convey our thanks to all our friends at Mariposa for the cards, flowers & your sincerity at the time of my father, Mr. Saint's funeral. VIRGINIA ORR & FAMILY.

Riders Wanted, Santa Ana area, 7 a.m. - 3:42 p.m., Aircraft Div. ext. 5117, 714-541-4789.

To all our friends: Margaret & I thank you for the thoughtful retirement gifts & wonderful party. We'll miss you all. MARGARET & JACK GLENN.

My sincere thanks & appreciation to my many friends at Northrop for the lovely farewell luncheon & money tree. My days at Northrop are memories I will always cherish. MARY GSCHWEND.

My sincere appreciation to the many friends at Northrop for the flowers & expressions of sympathy on the death of my wife, Elizabeth Jo Dixon. CLAYTON E. DIXON.

Need ride from San Gabriel Valley - East L.A. area, 7 a.m. - 3:42 p.m. share expenses, Aircraft Div. ext. 4692. 213-327-4035, 213-542-3211.

I wish to thank all my many friends & co-workers for the great send off on the day of my retirement. RICHARD (DICK) PAYNE.

NORTHROP NEWS

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Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Chuck Campbell, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher.

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Ginnie Wiggins Given 30-Year Service Award

Service awards will be presented to 28 division employees during August and heading the list of recipients is Virginia H. Wiggins, data control clerk special, Hawthorne, who celebrated her 30th service anniversary Aug. 15.

Ginnie started out in the blueprints section at the Aircraft Division and joined the Electronics Division when it was known as the Nortronics Department.

"Working at Northrop has always been a pleasure for me because of the people I meet and work with. Why just in our section alone, we have all been together for at least 12 years, except for one man and he has been aboard three years," she said.

Upon her eventual retirement from Northrop, Ginnie has hopes of operating a day care center for small children.

Three employees at the Hawthorne facility celebrated their 25th anniversaries during August and they are: Joyce Elliott, material control analyst, Material Control unit; Benjamin Watkins, tool engineer, Manufacturing Engineering; and Ralph Crebs, senior engineer, Digital Avionics Development unit.

Others receiving service awards were: 15 years — Savario Musuraca and Norman Clark, Hawthorne; 10 years — Donald Holford and Lawrence Lee Jr., Hawthorne; 5 years — Mary Lou Angeleri, Robert Froeschle, Palos Verdes; and Alma Anderson, Judson Morris, Donald Avallon, Arthur Asato, and John Barkow, Hawthorne.

BEFORE AND after views of first area at Hawthorne facility to be fitted with new modular-shaped floor for cubicle offices for more comfortable work environments.

Finding Textbooks Unusable, Zuckerman Writes Own Book

During the eight years that he has taught English to evening classes at Los Angeles Valley College, Marv Zuckerman, engineering project administrator senior, became acutely aware of the lack of an adequate textbook to satisfy the course requirements.

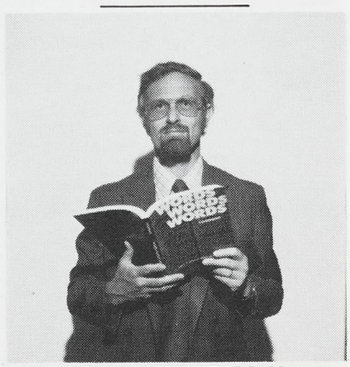
The obvious solution to Zuckerman was to write a book himself.

The result was, "Words, Words, Words," an anthology which has just recently gone into its second printing through Glencoe Press, Inc. The book has been widely acclaimed by professors and English departments of colleges and universities throughout the nation.

Explaining the reason for writing another vocabulary improvement book, Zuckerman said, "There are two main classes of books on this subject: self-improvement, do-it-yourself-type books, or textbooks. The first are quite good but not suitable for the classroom, and the second class offers no enjoyment to the students with the result that the students do not learn very well from them."

Zuckerman, who holds a master's degree in English from USC, found that once he had begun organizing his objectives for the book, he would require more time than he had daily to work on it. "Thanks to Northrop, and particularly my supervisor, Elmer Baldwin, I was able to go on a part-time basis at the job until I had finished the book."

Zuckerman feels the strong points of his book are: 1) the words to be learned by the students are used in context; 2) it talks about words and language; 3) exercises are unusual and highly constructive; and 4) roots and word elements are explained and discussed.



MARV ZUCKERMAN

Rearrangement Underway Within Hawthorne Plant

The Hawthorne facility is well into a major rearrangement and refurbishment, according to Don Ross, project engineer, Facilities Planning, and he reports "the results are proving to be more favorable than anticipated."

Thus far, removal of unnecessary partitions, addition of floor-to-ceiling enclosures around the assembly areas for noise abatement, and introduction of a modular-shaped working arrangement for the engineering groups, has resulted in a better more conducive working environment.

Personnel who had temporarily moved into trailers in the east parking lot while their area was being rearranged have since moved into the new modular-shaped areas and, according to Ross, "We are realizing better use of floor space and equipment."

As areas are refurbished throughout the facility, they are receiving brighter, more up-to-date color combinations lending a more comfortable work environment, Ross also noted.

"Our long range plans include utilizing the modular-shaped floor plans throughout the facility where applicable. Rearrangement of the Industrial Relations and Cost sections will be our next primary objective under the plan," Ross concluded.

Management Seminars Offered in September

A series of management seminars for Electronics Division management personnel offered each year for those managers who have completed the "Principles of Management" course or an equivalent fundamental management course, will start Tuesday, Sept. 10 from 5 to 7:30 p.m. and continue for six consecutive weeks at the Palos Verdes facility.

AIDATS—System Developed

(Continued from page 1)

ley Cole, system design and data link analysis; Chet Wetzel, technical management of subcontractors; Tom Leighton, project engineer, Moving Window Display; Jay Crow, project engineer, K-band radio receiver; John Overholser, project engineer, data link equipment modification; Sam Lalande, antenna testing at Fort Huachuca, Ariz.; George Kelly, maintaining of market continuity; and John Kibbe, Jim Mayberry, Ken Fish, and Steve Vavrek for contractual, financial and schedule responsibilities.

Other personnel engaged in the program are: Ron Brooks, Paul Chey, Martha Chapman, Carlos Chong, Stan Chock, Jane Cooper, Walt Davison, Stan Ecklund, Chuck Fuller, Al Garreffa, Joe Gustin, Rudy Huck, Bill MacCorkell, Mel Parrish, Rudy Pineda and Don Schultz, Electrical; and Jim Donahue, Gil DiBenedetto, Al Edwards, Merl Fairchild, John Groves, Stu Killian, Al Lysik, Norio Mitsuoka, and Bill Sponsler, Mechanical.

Quarter Earnings Up

(Continued from page 1)

"Follow-on contracts on the C-5A Galaxy and Omega navigation systems, coupled with new development contracts in the last six months for the B-1 electronic countermeasures system, the MULTEWS program, and the Space Shuttle gyro package, place the Electronics Division in a very solid position in coming years," General Manager Ferguson said.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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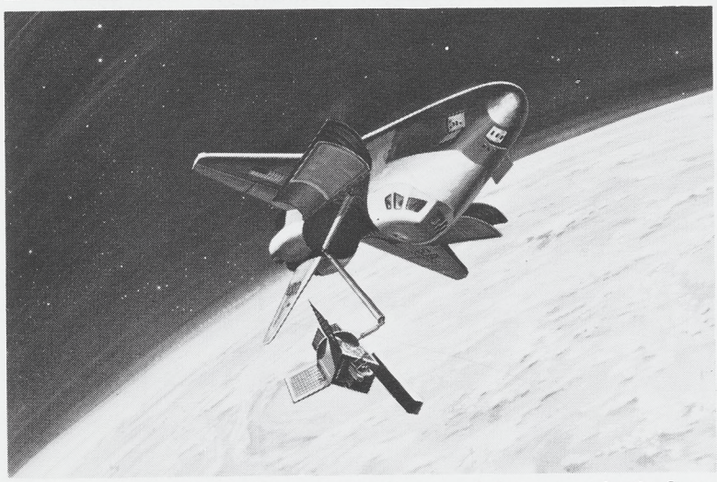


PRECISION PRODUCTS Department has been awarded a contract by the Space Division of Rockwell International for the design and development of a Rate Gyro Assembly to be used in the flight control system of the Space Shuttle orbiter vehicle. Artist's conception depicts Space Shuttle orbiter on routine mission in earth orbit. Photo courtesy of Rockwell International Space Division.

Would Do It All Again, Says 34-Year Division Employee Frieda Mooring

As senior member of the Electronics Division, Frieda Mooring, administrative accountant, Palos Verdes, took time out recently to reflect on her 34 years with Northrop and some of the hardships she faced in the early years.

"My first problem was getting hired. The interviewer just wasn't too anxious to start me out because of my lack of experience in accounting procedures. Plus he was convinced that I was going to pack and return to Oklahoma." But luckily for Frieda and Northrop, he gave her the job and 34 years later she is the senior administrative accountant throughout the company.

Frieda also recalled 10-hour work days, six days a week, after the start of the war and how car pooling then was a way of life as well as rationing of gas and meat for the table.

Long before the age of computer programmed payroll, each paycheck had to be hand signed, Frieda noted. "Many of the accounts payable routines are simplified today also due to the reduction of paperwork. For instance, the Air Force auditor was located right in our section and required several additional copies of each invoice that came in."

Through the years, Frieda has had anywhere from 2 to 30 fellow employees in her sections and has worked at both the Aircraft and Electronics facilities in Hawthorne, El Segundo, Anaheim, and Palos Verdes facilities. She joined Nortronics in 1962 when it was formed and then the Electro-Mechanical Division when it split from Nortronics in 1965. She moved into the Accounting section at Palos Verdes when the new facility opened in 1969.

Frieda credits good management for making Northrop the leader that it is in aerospace and says, "If I had it to do all over again, I would still choose to be a career woman at Northrop."

FRIEDA MOORING compares modern compact desk calculator to larger comptometer type calculator that she used in the early years with Northrop.

Northrop Announces Major Insurance, Pension Changes

Significant changes in Northrop's Group Insurance, Dental, and Retirement Plans are being made soon in keeping with a long established policy of providing fringe benefit programs which compare favorably with those offered by other major employers in our industry in this area.

High on the list of objectives to be satisfied by these programs are the providing of a degree of peace of mind with regard to the future and protection from the economic stress which can occur as a result of major or unexpected medical problems. None of these plans will require a contribution from the employee. The costs will be absorbed entirely by the company.

Because of the rapidly accelerating costs of medical care and the impact of inflation, the company has decided to make these changes as quickly as they can be implemented. The highlights below have been taken from recent announcements made to all employees.

Health Plans

With the new changes, the revised health plans will absorb most of the medical costs likely to be encountered by an employee and will, at no cost to him, provide a superior health care program for both the employee and his eligible dependents. These changes will be effective November 1, 1974.

Basic Plan

The new Plan will pay 100 per cent of the reasonable and customary fees charged for the services outlined below for you and your eligible dependents:

- **Hospital Expenses** — Pays 100 per cent of the charges for semi-private room and other hospital services and supplies. There will be no limit on the number of days of confinement.
- **Surgical Expenses** — Pays 100 per cent of doctor's fees for surgical procedures, including fees to assistant surgeons and anesthetists.
- **Physician Expenses** — Pays 100 per cent of charges for doctor's visits while hospitalized.
- **Diagnostic X-Ray and Laboratory Expenses** — Pays 100 per cent for diagnostic x-rays and laboratory expenses associated with an illness or injury whether in or out of the hospital.
- **Radiation Therapy Expenses** — Pays 100 per cent for radiation treatments.
- **Ambulance Expenses** — Pays 100 per cent for professional ambulance service to or from the hospital within a radius of 150 miles.

Major Medical

- **Maximum Coverage** — Each employee or dependent will have a lifetime maximum coverage of $250,000.
- **Deductible** — The major medical benefits shown below will be available after a deductible of $75 per individual or $150 maximum per family per calendar year.
- **One Hundred Per Cent Reimbursement** — The first $2500 of eligible expenses will be reimbursed at 80 per cent. Eligible expenses in excess of $2500 will be reimbursed at 100 per cent for the balance of the calendar year.
- **Mental, Neurosis or Personality Disorder** — Treatment for such conditions will be reimbursed at 50 per cent with a maximum payment of $20 per call and a maximum of 50 calls per calendar year.

Retirement Plan

Northrop's Retirement Plan is being changed because the declining stock market values and increasing living costs, particularly in the past two years, have seriously reduced the value of the retirement income which comes from the variable portion of the Retirement Plan.

Since 1957, one portion of the company paid pension was in a fixed amount and the other portion invested in an independently managed portfolio of common stocks. The variable portion was designed to act as insurance against inflation.

For most of the time since the plan was put into effect, retired employees received significantly higher pension incomes than they would have under a conventional fixed plan. Retired employees may now drop the variable plan and elect to receive, beginning December 1,

(See BENEFIT CHANGES, page 4)

Education With Industry Officers Begin Training

Captains Donal K. Moulton, John D. Schafer and David T. Spencer, USAF production/procurement officers, have started the first phase of a 43-week tour of duty with Northrop as participants in the Education With Industry (EWI) Program.

The program, a joint venture of the Air Force Institute of Technology and leading government contractors, seeks to train selected career officers in a technological management environment affording them an opportunity to interpret events and make better decisions.

A basic program goal is to develop an understanding of the total cycle involved in weapons system concepts, design, development, test, manufacture, and support.

During their stay at Northrop, the officers will rotate through major departments and functions, actually working on management-level problems. They will visit each major operating division, subsidiaries and specialized departments.

Captain Moulton, a native of Los Angeles, holds a B.A. degree from the University of Utah. He has seven years experience in the USAF with the past 18 months as F-5E Joint Test Force maintenance officer at Edwards AFB. Prior to that, he was maintenance officer in the 57th Fighter Weapons Wing, Nellis, AFB, and served as a helicopter maintenance officer in Vietnam and T-37/T-38 maintenance officer in ATC.

Captain Schafer entered the USAF in 1965 and is a native of Maryland. He attended Davis and Elkins colleges receiving a B.A. degree in 1964. He has nine years USAF experience with the last four years as procurement officer buyer of Research and Development Study Contracts, Headquarters SAMSO, Los Angeles. Earlier assignments involved directing the USAF postal operations for the entire United Kingdom and courier service.

Captain Spencer has nine years experience as a USAF officer devoting the past four years to training Latin American pilots in helicopter special operations, and performing a wide spectrum of helicopter missions in support of the USAF Southern Command objectives. Prior to that, his duties were to provide helicopter gunship support to Army special forces in long range reconnaissance patrols in Vietnam, assistant operations officer and C-131 aircraft commander flying DOD air evacuation patients throughout the USA.

Captain Spencer is a graduate of Brigham Young University with a B.A. degree. He is a native of San Diego having joined the USAF in 1965.

BERT ACOSTA, art editor, Aircraft Division Graphics, seated, gives Captains Schafer, Moulton and Spencer a preview look at the next edition of the Northrop F-5 Technical Digest which is published monthly for all Northrop tech reps.

Radio Services Technicians Install Solid State Mobile Unit

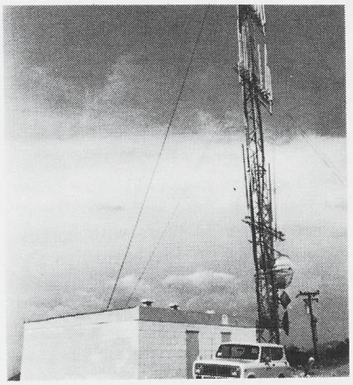
Technicians at the Radio Services Department, Electronics Division, Palos Verdes, are finding their daily routines a little easier to meet since the installation of a solid state mobile repeater at the Mt. Lukens repeater site in the Angeles National Forest.

According to Ward Cayot, supervisor, Radio Services, the solid state unit was installed to reduce wattage and lengthen time between service calls for the repeater station which accommodates over 40 highway, two-way radio units currently utilized in Northrop vehicles throughout the Southern California operations.

The new unit represents a marked energy savings factor (290 watts required prior to presently 90), since it must operate 24 hours a day, seven days a week.

Cayot also noted that every four vehicles equipped with two-way radios eliminate the necessity for a fifth vehicle being on the road.

Radio Services technicians, in addition to maintaining the repeater station atop Mt. Lukens, are responsible for installation and servicing of the communications system at the Ventura, Electro-Mechanical, Electronics, and Aircraft divisions as well as the Palmdale and Edwards AFB facilities.



VITAL LINK in Northrop's communication system between the main facilities and their vehicles on the road equipped with two-way radios is repeater station.

Credit Union Offers Certificates

The board of directors of the Northrop Credit Union, Hawthorne, has announced that Promissory Certificates in denominations of $1000 each are being offered to employees of Northrop, its subsidiaries and retirees as an investment.

The Credit Union signs an individual Promissory Note to the subscriber who will loan the Credit Union a minimum of $1000. The board authorized a maximum issue of $500,000 for a six-month maturity yielding 7.75 per cent and a maximum issue of $500,000 for a 12-month maturity yielding 8 per cent per annum.

Investments may be made at any time up to Nov. 29 until the maximum issuance of $1,000,000 is attained. Contact the Credit Union, Aircraft Division.

Employee's Son Bound for Stanford

Bruce Ishimoto, son of Norman Ishimoto, senior engineer, Electrical and Instrument Systems, Aircraft Division, has been accepted to Stanford University as a candidate for the School of Medicine.

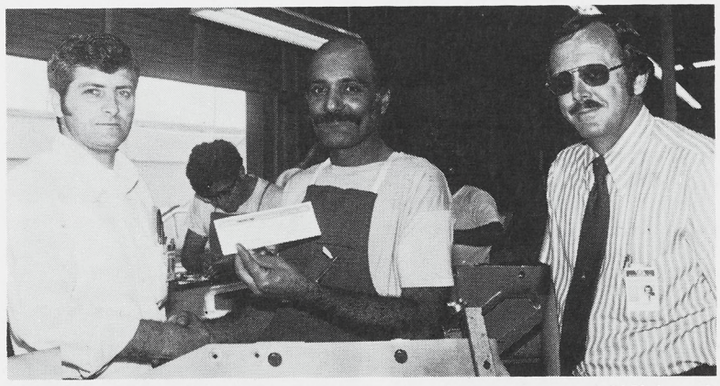
Bruce Ishimoto

Bruce just recently graduated from Narbonne High School, Harbor City, where he was valedictorian for his class and was accepted into the Ephebian Society.

AAMA Appoints Ware

James Ware, president and general manager of Northrop Architectural Systems, has been appointed to the board of directors of the Architectural Aluminum Manufacturers Association. His appointment was effective Oct. 1.

AAMA is an association of those engaged in the manufacture and sale of architectural aluminum and related products.



NORTHROP PACIFIC, Inc., employee Jose Paredes, center, earned $250 in cash awards for his suggestions dealing with improved counter boring and broaching methods for F-5E pylon assembly. Presenting the check are Ernie Hughes, left, foreman, Pylon Assembly, and John Meehan, director, Quality Control and Suggestion Award Program coordinator. Since the program was launched in April, 18 employees have received cash awards for their cost saving suggestions.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Motorcycle, 1972 Suzuki, 185cc Enduro, 4500 mi., $500. 213-323-5740.

Cadillac, 1956 sedan DeVille, orig. alum. whls., leather int., $375. 213-541-3747.

Motorcycle, 1970 Harley Davidson 250cc Sprint, under 5000 mi., dirt or street, $425. 213-644-5747.

Motorcycle, 1973 Honda CR-250 Elsinore, $625. 805-484-1398.

Karmann-Ghia, 1970, auto. stick shift, $1500. 213-378-3993.

Triumph, 1965 Spitfire, AM-FM radio, radial tires, mag whls., rebit. eng., extras, $600. 213-777-0304.

Ford, 1966 Mustang, 2-dr. deluxe h/top, r/h, p/s, auto. trans., $699.50; Ford Falcon, 1966, 4-dr., 6-cyl., auto. trans., r/h, $425. 213-325-3404.

Motorcycle, 1970 Harley Sprint 350cc, single upswung exhaust, $300. 213-833-8813.

Volkswagen, 1968, stick shift, $550. 213-372-8025.

Dodge Van, 1969, slant 6 eng., tape deck, 4 spkrs., $2000. 714-638-1164.

Motorcycle, 1973 CL 250, new bore & piston assy., main bearings, seals, Mikuni, many extras, $625. 213-679-4449.

Opel, 1968 1.9L eng., 4-spd., $550. 213-676-4573.

Chevrolet, 1964 4-dr. h/top, V-8, $300. 213-778-8610.

Ford, 1967 Fairlane GTA, auto., air, mags, new tires, p/s, d/bks., $575. 213-374-1924, 213-372-0419.

Toyota, 1966, new clutch, valves ground, $400. 213-545-6850.

Fiat, 1971 850 Spyder, new eng., $2000. 213-863-9882.

Motorcycle, 1972 Honda CB 350, $450. 213-374-0490.

Volkswagen, 1971, extras, radials, lug. rack, FM-AM radio, $1550. 213-547-1464.

Motorcycle, 1971 Yamaha Enduro 125cc, street or dirt, $300. 213-676-5787.

Opel, 1968 Kadett Rallye, needs minor tune-up, approx. bal. $650, $700 or take over $40 mo. pymts. 213-644-9437.

Ford, 1973 Gran Torino, Brougham, p/b, p/s, a/c, 12,000 mi., $3650. 213-542-5280.

Ford, 1959 Fairlane 500, 2-dr., new eng. installed recently, $175. 213-379-4609.

Truck, 1963 GMC short-bed, V-6 eng., $300; motorcycle, Yamaha 360 MX, extras, $625. 213-679-7387.

Olds 88, 1955 Classic, p/s, p/b, auto. trans., $395. 213-370-3821.

Pontiac, 1965 Catalina h/top cpe., V-8, a/c, p/s, p/b, tape deck, $450. 213-375-8536.

BMW, 1972 Mod. 2002, AM/FM radio, a/c, sun roof, $4350. 213-372-2771.

Model A Coupe, 1931, disassembled, eng. compl. rebit., $1500. 805-942-4433.

International Scout II, 1973, 4-whl. dr., 6 cyl., 24,000 mi., approx. bal. $1800, $1700 or take over $76.38 mo. pymts. 213-920-3255.

Opel GT, 1971, 38,000 mi., AM/FM stereo, $2150. 213-372-6778.

Corvair, 1961, runs good, $175. 213-644-4638.

Miscellaneous For Sale

Sewing Machine, ElectoGrand portable w/attach., $50. 213-328-1054.

Engine, Corvair, 1966 140, 200 h.p., approx. 75 hrs. old, complete, $450. 213-371-4560.

Outboard Motor, 35 h.p., Mercury w/prop., $125; dryer, Gen. Elect., elec., white, $50. 213-944-3794.

Guitar, Gibson, Melody Maker, $90; guitar amp., bass, Vox-Kensington, $85. 213-542-6436.

Sofa & love seat, 8', blue & green, 2 hi-back chairs, blue, $200. 213-370-5902.

Transmission, 1969 Plymouth 440 Torque Flite, $40. 714-847-7843.

Wedding Dress, white chiffon, size 10, $50. 714-871-3748.

Miscellaneous For Sale

Pups, sheltie, AKC, show/pet quality, $125. 213-374-6727.

Living Room Set, 2-pc., Early American, $160. 714-532-2243.

Ski Boat, 1973 17' Cheetah, 150 h.p. Mercury, many extras, $3100. 213-324-5449.

Revolver, Colt Python 357 mag., 6" bbl., vented rib, unregistered, $200. 213-363-2630.

Dinette Set, formica top, dk. brn., 6 chairs, octagonal table w/2 extra leaves, $50; dresser & mirror, $25.; coffee table, 2 matching end tables, Early American, $25. 213-324-0885.

Couch, 14' sectional, $400. 213-679-3194.

Throw Rugs, 3, approx. 4' x 6', $8 ea. 213-377-3806.

Clarinet, b flat Selmer Signet, $125. 213-325-8932.

Pool Table, Delta ¾" slate, 4 x 8, 1½ yrs. old, $450. 213-634-3391.

Lamp, Tiffany, rectangular, Billiard, 3' x 1', $45. 213-328-2046.

Couch, 9' blk. nag., $40; playpen $5; swing set, $15. 714-847-5429.

Sailboat, 1972 Venture, 22' fiberglass sloop, sleeps 5, galley & head, motor, trailer, extras, $3950. 714-826-8068.

Bicycle, girl's Huffy 3-spd., w/chain lock, $25. 213-329-9123.

Camera, Petri, 35mm SLR w/52mm & 135mm lens, cases, $100. 213-633-7785.

Camper, 10' El Dorado, 2 sinks, stereo, port-a-poti, $1000. 213-675-4725.

Canopy Bed, white French provincial, twin-size, box springs, mattress, pink ruffled canopy top & bedspread, 5 drwr. dresser, 3 drwr. dresser & mirror, night stand, $195. 213-675-5265.

Radio, AM-FM, Motorola Mod. FM 150M 12 V.-neg. gnd. w/multiplex adapter socket, 2 spkrs., $25. 213-374-2117.

Sofa, matching chair, 5-pc. dinette set, $80. 213-370-1765.

Boat, Hornet Jet, $3350. 213-677-4035.

Rifle, 30-06 BSA English, Weaver K-2.5 scope, sling, case, $125. 213-375-7265.

Pillow, lg. floor-type, matching throw pillows, $25. 213-530-3521.

Strawberry Plants, lge. bearing, 10¢ ea., small ones, 4 for 25¢, 213-370-7904.

Wood, many 2" x 4" x 6' & 3 4" x 8" x 8', $26. 213-644-2750.

Wall Mirror, lge., 36 x 48, $50. 213-675-1000.

Camera, Polaroid Land, 3 yrs., carrying case, flash attach., self-timer, $40. 213-326-6200.

Boat, 14' Merline, fiberglass, 50 h.p. Mercury outbd., remote controls, aux. gas tank, trailer, $800. 213-330-8616.

Rear Axle Housing, for 1968 Chev., complete w/3.08 to 1 ratio gears, $20. 213-326-5731.

Sailboat, 1971 12' American fiberglass catamaran, $750. 213-774-0175.

Stove, 36 x 18" countertop, oven & broiler, stainless steel bltins., copper hood, $65. 213-378-9660.

Tires, 4 & wheels, off new Luv pickup, 600-14, 6 ply, $100. 213-865-7572.

Sofa, 8' w/5' loveseat, Herculon, b&w checks, $100. 213-679-4863.

Fur Coat, stroller style, mink & suede, never worn, $500. 213-376-2127.

Colt, Appaloosa, $800. 213-329-7994.

Train Sets, model N, postage stamp, locomotives, rolling stock, pwr. packs, track, access., $90. 213-679-0876.

Refrigerator, Gibson, needs work, $10. 213-677-7421.

Camera & equipment, Minolta SRT-101, 58mm, 200mm telephoto lens, 2 ea. 2X converters, 1 tripod, $400; tires, 2 C-50x13 Firestone, w/2 7"x13 Indi rims, $200. 714-994-3595.

Rifle, 308, lever action Mod. 99, scope, Bushnell variable 2.5 - 8 Hunter's Spec., ammo & case, $175. 213-833-3793.

Arc Welder 220, 300 amp. Miller, $120. 213-372-0428.

Bicycle, boy's 3-spd. Senator, $30. 213-323-8089.

Coaster Bikes, man's, woman's & girl's, $35. 213-376-4831.

Ski Boat, 16', fiberglass, 70 h.p. Merc. outbd., 18 gal. bltin. tank, $1000. 213-454-2255.

Bicycles, men's 10-spd. & ladies 3-spd., Free-Spirit Sears, many extras, $65. ea. 213-549-0708.

News Classified Advertising Policy Change

Northrop News classified advertising policy is being modified starting with this issue. Ads will now be accepted for up to three items from each employee, however, separate forms must be submitted for each classification of items.

The classifications available are:
Vehicles for sale;
Miscellaneous for sale;
Wanted to buy;
For sale or trade;
Rentals wanted;
Lost and found;
Personals;
Free (to be given away);
Ride offered; and
Ride wanted.

No business advertising will be accepted even though the business is run by Northrop employees, and no real estate advertising will be accepted except from bona-fide transferees who must move due to company job assignment.

Secretaries and clerks may order the classified ad request forms from Industrial Supplies for personnel in their group.

Books Wanted

Paperback and hard cover books for lending library for Northrop personnel on overseas assignments. Mail to Orgn. 8850, Zone AH, or call R. M. Brown, ext. 4004, Aircraft Division. Will pick up.

Miscellaneous For Sale

Rifle, near new, 300 Savage, lever action, scabre & shells, $100. 213-674-5953.

Dining Room Table, mahogany, $15.; radio-phono comb., $25.; desert air lamp, McCalls, $15. 213-324-7059.

Boat, 18' Glen-L flat bottom, Dodge hemi eng., $600. 213-645-0526.

Coffeemaker or bottle/can warmer, auto., 12 VDC, never used, $8. 213-829-3216.

Car Radio, Motorola AM/FM, fits in dash, $50. 213-477-3876.

Travel Trailer, 1951 15' Aljoa, w/butane frig. & lights, awnings, many extras, $250. 213-838-2793, 213-391-7513.

Pup, male Irish setter, papers, 9 mos. old, all shots, $150. 213-786-7277.

Sofabed, Sealy, bn. tweed, $40. 213-673-4890.

Wanted To Buy

Barber Chair, old. 714-894-9517.

Bicycle, 19" or 20" 3-spd., girl's, for a cardiac patient, good condition. 213-326-6200.

Refrigerator, used, good condition, med. size. 213-860-9451.

Golf starter set, women's. 213-376-3790.

Bicycle, girl's adult size, good condition, reasonable price, & dresser or chest of drwrs., maple. 213-644-3957.

Washer & gas dryer. 213-547-4830.

Golf Clubs, ladies, left-handed, with or w/out bag & /or cart. 213-833-5755.

Wheel Rims, used, front & back, & sprocket for 20" bicycle. Reasonable. 714-892-6161.

Travel Trailer, small, self-contained & a/c. 213-679-6982.

For Sale or Trade

Camping Trailer, 1968 Casual, 15', sleeps 4, $625. or consider trade for car or pickup. 213-328-3306.

Sectional, 2-pc., white, 3- styling chairs, brn. leather cot, $30 ea. or trade for reclining chair. 213-675-6020.

Engine, Ford 144 c.i.d., trans., new clutch, $75 or trade for pneumatic tools & spray gun. 213-941-1865.

Pickup, 1939 Ford, w/327 Chev. eng., $975 or trade for tractor & implements or Pre-WW II sedan. 213-644-2928.

Rentals Wanted

Garage Apt., unfurn., close to Northrop, working bachelor. 213-675-1000.

Thomas to Conduct IABC Workshop

The Portland, Ore., chapter of the International Association of Business Communicators (IABC) has invited J. B. Thomas, Northrop corporate manager, Employee Communications, to conduct a seminar on "Planning and Implementing an Effective Employee Communications Program."

Jim has conducted workshops for the local IABC chapter, and is accredited by the Public Relations Society of America.

Harness Races

Personnel Activities is sponsoring an evening at the Harness Races, at Hollywood Park, Saturday, Oct. 19. Cost is $2.50. The park opens at 6 p.m. and the first race starts at 7:45 p.m.

Free

Sofabed, full size. 213-644-2750.

Ride Wanted, Offered

Carpool needs 4th member, leave from Huntington Ctr., Beach Blvd. & Edinger Ave., Huntington Bch. to Aircraft Div., 7:30 a.m. - 4:12 p.m., Aircraft ext. 4407, 714-968-4800.

Personals

Piano wanted, used, will pick up from anyone willing to give it away. 213-675-6881.

Mrs. Smith & I wish to thank the many fine people at Northrop who participated in my retirement affairs. Will miss you all very much. HARP SMITH.

Our sincere appreciation to the many friends at Northrop for the flowers, expressions of sympathy & the contributions to the City of Hope on the death of my husband & our father, Lloyd Forstrom. RUTH, MIKE & RANDY FORSTROM, BONNIE WOODWARD.

My sincere & cordial thanks to all my friends at Northrop for the hospital visits, flowers & cards during my recent surgery & recovery in California. C. D. GERANOPOULOS, ATHENS OFFICE.

The family of Richard "Dick" Bargman wishes to express their deep appreciation & thanks for the prayers, cards, & generous gifts of his friends & coworkers at Northrop.

I would like to thank all my friends for such a happy farewell. You will be missed. NANCY HART.

My sincere thanks & appreciation to my many friends at Northrop for the lovely farewell party, gifts & cards. ROSE ROSE.

Many thanks for the party & especially the loot. I deserved it. Remember! Wear your badge. BRADLEY.

NORTHROP NEWS

Vol. 32 **No. 9**

Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft and Electronics Divisions; Park Irvine, Ventura Division; Chuck Campbell, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

HIGHLIGHTS OF ALL-NORTHROP PICNIC AT POMONA FAIRGROUNDS

Division Hosts Finance Group For Seminar

Finance and Accounting managers and personnel throughout the Electronics Division and its departments participated in a two-day seminar and workshop at Palos Verdes during August.

Opening remarks to the gathering were made by James D. Willson, corporate senior vice president, Finance and treasurer, who presented the corporate outlook for 1974.

Following addresses by David N. Ferguson, corporate vice president and general manager, Electronics Division, George Chalmers, vice president, Finance, and H. Frankenberg, manager, Finance Department, the attendees were briefed by each of the facility representatives.

Workshop sessions dealing with Planning Project Control, Accounting, Overhead Budgeting, and Cost Control were held for the remainder of the seminar.

Attending the seminar were representatives from Precision Products Department, Hallicrafters, Warnecke, Northrop Dakota, Inc., Berkeley Scientific Laboratories, Avionics and Finance Departments.

Dinner Dance Coming

The annual end of the year dinner dance for members of the Management Club will be held Saturday, Nov. 16, at the Hyatt Airport Hotel located next to The Forum in Inglewood.

Campers Plan Outing

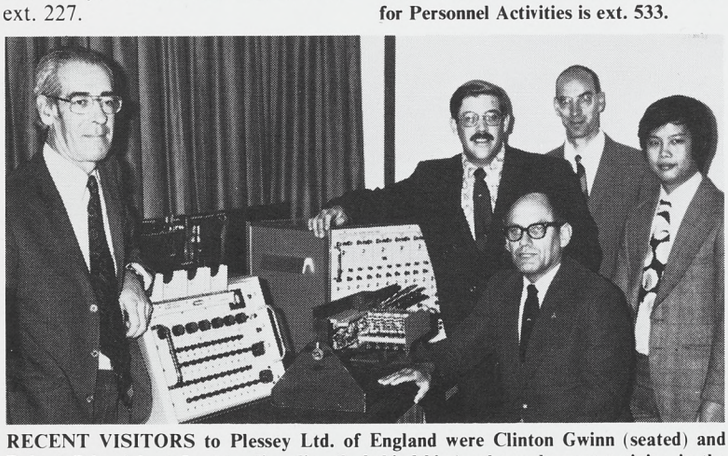
The NRC Wanderers Camping Club's next outing will be to Travel Village in Valencia the weekend of Oct. 18. Featured activities will be a steak fry dinner, swimming, volley ball and plenty of space to ride bicycles.

For reservations contact Frank McGinley, Electronics Hawthorne ext. 227.

THAT NEW smile in the Personnel Activities office, Hawthorne, belongs to Fran Fitzpatrick who has taken over the NRC and personnel services functions. Fran offers a reminder that the new number for Personnel Activities is ext. 533.

Arts and Crafts Show

Persons interested in displaying their handicrafted items at the NRC Arts and Crafts Show Nov. 16.



RECENT VISITORS to Plessey Ltd. of England were Clinton Gwinn (seated) and Robert Schweickert Jr. (standing directly behind him), who underwent training in the repair and maintenance of the weapons control unit which Plessey builds for the Harrier. Northrop is under licensing agreement to Plessey for repair depot work on the system under a Naval Air Systems Command contract.

BENEFIT CHANGES — Improvements

(Continued from page 1)

1974, a fixed amount equal to the amount received in the first month of their retirement. If they prefer, they may continue with the combination of fixed and variable benefits in accordance with the present plan.

The variable element of the Retirement Plan will be eliminated for all new employees and for retirement benefits earned after January 1, 1975. At the time of retirement, current employees may choose to retain the variable feature with regard to benefits earned prior to January 1, 1975 or they may choose a fully fixed retirement payment.

Dental Plans

• **No Employee Contribution** — The contribution for dependent coverage will no longer be required. As a result, all costs of the dental plans both for employees and dependents will be borne by the company. This will result in a savings of 93 cents per week for those who currently have dependents enrolled in either plan.

• **No Deductible** — The deductible will no longer be required before benefits are payable under the Crown Insurance Plan. The schedule of benefits currently provided remains unchanged.

These changes, together with the $100 Supplemental Accidental Insurance; the Long Term Disability Insurance Plan (essentially 60 per cent of your weekly pay up to age 65); and the Survivor's Benefit Plan (income to your spouse or minor children based on your pay and length of service with a minimum of $200/month for a minimum of 12 months), provide comprehensive protection for you and your family.

These short summaries of the improvements in our Northrop plans cannot contain all the details which will appear in the various benefit booklets and, as usual, the extent of each coverage will be governed by the terms of the master policies. In the meantime, Industrial Relations or Group Insurance Administration will be happy to answer any questions concerning the plans.

In keeping with the company's determination to always provide a competitive level of wages and fringe benefits, the company's review process will continue and future revisions will be made as they become appropriate.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 32, No. 10 | October 1974

Northrop Systems Integral Part of The GATE Project

A four month research program designed to observe and understand the tropical processes which "drive" the global circulation of the entire atmospheric system was concluded in September and Northrop hybrid Omega-Inertial systems served an integral part in the gathering of highly accurate information.

According to John Brennan, program manager for Omega systems in GATE (Global Atmospheric Research Program Atlantic Tropical Experiment), "The integrated Omega-Inertial systems provided capability for precise knowledge of airplane attitude, position, and velocity that has not been previously attainable."

Bill Taylor, program field engineer who supported the systems in Dakar, Africa, reports that the Northrop systems were outstanding in all aspects, operating through adverse weather conditions including dust storms, fog, rainstorms, and intense electrical storms.

The Northrop systems were flown aboard a C-130 and a DC-6 aircraft. Both aircraft and navigation systems were operated by the National Oceanic and Atmospheric Administration.

Altogether, 3000 to 4000 scientists and technicians, approximately

(See GATE PROJECT, page 8)

ONE OF 19 Boeing-built T-43A jet trainers equipped with Northrop navigation systems flies high above scenic Washington terrain. The military version of the 737 airliner, the T-43A is used for the upgrading of undergraduate navigators at Mather AFB.

Lipscomb Announces Changes Within Avionics Department

Organization changes and personnel appointments affecting the Hawthorne and Palos Verdes facilities have been announced by A. B. Lipscomb, vice president and manager, Avionics Department.

Lipscomb announced the formation of three new departments and the redesignation of three others.

New departments are: Avionics Engineering Department, R. B. Whitman, manager; Advanced Development Department, C. L. Bose, manager; and Avionics Marketing Department, J. B. Meagher, manager.

The departments redesignated were: Tactical Avionics Department to Tactical Avionics Programs office, J. M. Bloodworth, director; Navigation Department to Navigation Programs office, D. J. Avallon, manager; and Special Projects Department to Special Projects Programs office, A. G. Taie, manager.

In another announcement, H. Frankenberg, manager, Finance Department, appointed John Roehrig to director of Financial Control section which was formerly the Financial Control group.

To All Northrop Employees

NOTE: The company this week issued the following statement concerning news reports relating to corporate political contributions.

In May 1974, the board of directors of Northrop Corporation felt that it was in the best interest of all shareholders that two independent firms of auditors be authorized to investigate thoroughly all facts pertinent to the use of corporate funds for political purposes.

A spokesman for the audit committee of the board stated that the extensive audit has been completed by the firms, Ernst & Ernst and Price Waterhouse, and the final report is in preparation and will be presented to the board within a few weeks.

The audit committee spokesman said it is regrettable and certainly not in the best interest of the public or the company's some 17,000 shareholders — representing more than 3 million shares — that attorneys for a holder of two shares of common stock, last week, saw fit to file an affidavit which draws conclusions and makes assertions based on partial and unverified information which can be misleading. The affidavit was based on statements not yet filed in court and on incomplete data being gathered for the auditors' report.

When the final audit report has been received and reviewed by the board of directors, a full and complete disclosure of all pertinent facts will be made to all shareholders in the proxy statement.

Contributions To AID-United Givers Needed

Beginning the week of Oct. 21, personnel are urged to sign up or redesignate their contributions to the AID-United Givers Campaign.

According to Jo Roth, campaign chairman, Aircraft Division, a large number of employees are not aware that the contributions that they have designated to go to a favorite charity are good for one year only and unless they redesignate during this period, their contribution will go into a general fund managed by AID-United Givers which is then distributed evenly among 16 national charity organizations.

Sign up and redesignation of contributions must be accomplished before end of shift Oct. 25.

Division Lauded For Support to T-43A Program

Another highly successful production program has been completed by the Electronics Division with the delivery to the U.S. Air Force of the last of 20 navigation subsystems for use in T-43A trainers.

The twentieth subsystem will be the backup unit for the 19 airborne subsystems as the division begins one year of serving as the repair and spares depot in support of the aircraft at Mather Air Force Base, Calif.

The Northrop subsystems are an integral part of the Air Training Command's Undergraduate Navigator Training System (UNTS) which utilizes 19 T-43A aircraft (the military version of the Boeing-built 737 short-haul airliner) and the T-45 ground system consisting of 52 ground simulators and master computer which supplies all non-real time data.

Bill Stroub, T-43A repair depot program manager, noted that the division delivered every subsystem on time and within cost during the course of the program. He also noted the Northrop personnel involved had been commended in a letter to Don Avallon, manager, Navigation Program office, from the director of the Specialized Aircraft Program office, Aeronautical Systems Division (ASD).

The director cited the Northrop Electronics Division team as outstanding in all respects in providing timely, professional support and for demonstrating a degree of cooperation and teamwork seldom experienced in acquisition programs.

Each Northrop subsystem consists of a 1060 digital computer, converter starter, central input/output unit, power distribution unit, and navigator control indicator panel.

Dinner Dance Coming

The annual end of the year dinner dance for members of the Management Club will be held Saturday, Nov. 16, at the Hyatt Airport Hotel located next to The Forum in Inglewood.

Contact ticket chairman for reservations.

Northrop and McDonnell Douglas Enter Team Agreement on U.S. Navy Fighter

Northrop and McDonnell Douglas Corporation have entered into an agreement under which they will jointly develop and propose an Air Combat Fighter (ACF) for the U.S. Navy, which is based on the YF-17 design now under evaluation by the United States Air Force in the ACF competition.

The agreement was made by President Thomas V. Jones and McDonnell Douglas President S. N. McDonnell. Details of the arrangement are being worked out between the two contractors.

Under the teaming agreement, McDonnell Douglas will have prime contract responsibility for a carrier-suitable version of the YF-17 to meet the requirement of the proposed U.S. Navy Air Combat Fighter (VFAX). Northrop will have prime contract and design responsibility for the USAF Air Combat Fighter and YF-17 variants for use by NATO nations and other allies.

The Air Force is currently conducting a flight evaluation at Edwards Air Force Base, between Northrop's YF-17 and General Dynamics' YF-16, and plans to select one plane early in January 1975, for full-scale development and introduction into the USAF inventory.

Agreement

The agreement between Northrop and McDonnell Douglas supports the U.S. Government's desire to make maximum use of components and technology of the USAF lightweight fighter prototype program on both the USAF and USN Air Combat Fighters. Such common effort would achieve large savings in procurement, operation and logistics support, while increasing deployment flexibility. The agreement also recognizes that it is in the national interest to develop industry teams to maintain a broad industrial base in the United States.

Over the past 20 years, both companies have concentrated their fighter design efforts on the development of high performance, twin-engined aircraft. Both companies also have extensive experience in the international aircraft marketplace.

Northrop has produced and delivered more than 2200 twin-engined tactical and trainer aircraft, which are in service with the USAF and more than 20 nations around the world. The company's latest combat aircraft are the F-5E International Fighter and its two-place companion, the F-5F.

McDonnell Douglas has produced more than 4500 of the F-4 Phantom fighter, including the F-4B model, which has been in operational service with the U.S. Navy since 1961. Its newest combat aircraft is the F-15 air superiority fighter for the U.S. Air Force, which goes operational next month.

THE F-5E TIGER II underwent evaluation tests in Switzerland in its primary role as an air superiority fighter and operational capability in the Swiss terrain, weather and facilities. The tests and evaluation were conducted as a joint program by the Group for Defense Procurement and the KFLF.

Joe C. Jones Joins Northrop

Joe C. Jones was appointed assistant to the president for Aeronautical Systems, reporting directly to Thomas V. Jones, Northrop president.

Jones concluded a distinguished 30-year career in government services when he retired in November 1973 as acting assistant secretary of the U.S. Air Force for Research and Development.

During his career he served in a number of important technical positions in the Air Force, the Advanced Research Projects Agency, joint committees of the Air Force and the Atomic Energy Commission, and the Department of Defense and NASA.

From 1961 to 1966, he was on the staff of the assistant secretary of the Air Force for Research and Development with responsibility for development of aeronautics, propulsion, ballistics, missiles, space power and booster rockets. In 1966, as deputy assistant secretary of the Air Force for Research and Development, his responsibilities covered the entire Air Force Research and Development program from basic and applied research to operational system developments.

Northrop Program To be Aired on KCET

Educational television station KCET Channel 28 will offer a look at how the Northrop Alcoholism and Drug Abuse Counselling Program works at 8:30 p.m. Oct. 22.

The Northrop program which is considered a model for industry to follow is conducted by Duncan Thomas and Edmund Furtado, corporate employee counselling staff.

The television presentation will feature a typical training session illustrating how Northrop managers are taught to deal with the problems of the alcoholic employee. The dramatization will use a cast of Northrop people from various facilities.

BOB ELDER

SETP Honors Elder At Annual Symposium Held in Los Angeles

Robert M. Elder, manager, Flight Test and Evaluation, was named a Fellow of the Society of Experimental Test Pilots during an awards ceremony at the society's annual symposium held in Los Angeles Sept. 28.

Elder, who is the outgoing president of SETP was elected with five other prominent figures in aerospace to the Fellow grade. The others were Irv Burrows, chief test pilot, McDonnell Douglas; Capt. Pete Conrad, former astronaut, and currently vice president of Operations, American Television and Communications Corporation; John Christiansen, chief test pilot, S-3A Program, Lockheed; Joe Dobronski, director, Flight Operations, McDonnell Douglas; and Paul Thayer, president and chief executive officer, LTV.

Elder will serve as executive advisor to the board of directors of SETP during the coming year.

Employees Attend SCAIEOC Workshop

The Southern California Aerospace Industry Equal Opportunity Committee (SCAIEOC) sponsored a workshop on "Job Relatedness and the Law" last month.

The workshop was designed to assist those persons with the EEO and employment responsibilities to become more knowledgeable about legal requirements related to employment selection procedures, such as interviews and tests.

Each division has a representative in the organization and two of the officers are Northrop employees. Members are Paul Lehman, Aircraft Division; Fred Rodriguez, Electro-Mechanical Division; Otha Stubblefield, SCAIEOC secretary, Electronics Division; Herb Gibson, Ventura Division; and Mary Person, SCAIEOC chairperson, corporate office.

Northrop representatives attended from the corporate office, Aircraft Division, Electro-Mechanical Division, Electronics Division, and Ventura Division.

MEMBERS of each Northrop division at SCAIEOC workshop on 'Job Relatedness and the Law' at Hawthorne.

ALCOA Advertisement Salutes Completion Of UCB Building; Features NAS' Role

Northrop Architectural Systems was prominently featured in a 16-page pull-out advertisement of the Aluminum Corporation of America that appeared in the "Architectural Record" magazine.

The ad saluted the completion of the United California Bank building in Los Angeles, the largest building west of Chicago. The architect was Charles Luckman Associates with C. L. Peck-Diesel Contractor as general contractor. Northrop Architectural Systems was curtainwall fabricator and erector.

In discussing the role Northrop Architectural Systems had in the building, ALCOA said, "'You can't move on a job like this without close support from the vendor,' says James Ware, president of Northrop Architectural Systems. 'The fabricator and the extruder have to work closely. ALCOA gave us excellent support. They pushed to give us the sizes and shapes we needed for the job.'

Workmanship Pride

"Mr. Ware is proud of the work Northrop did on the United California Bank Building. 'I can't help believing our people probably turn out the best architectural work in the country.'

"Ted Peters, assistant project manager for C. L. Peck-Diesel Contractor, recalls some reasons Mr. Ware can be proud of Northrop's work on UCB Building: 'We went to New York to interview curtainwall contractors for this job only four months after signing with the owners. All we had to show were schematic drawings of the curtainwall design. But Northrop impressed us and the curtainwall consultants with their expertise.

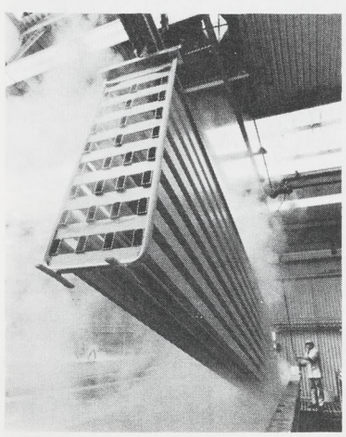
"'I'd say Northrop's testing in Florida and the special loading and handling system they developed for this job were their two most outstanding accomplishments. This job was ' fast tracked ' as you know and when Northrop got going, they really moved.'"

The statement went on to quote the late Joe Manolovits, NAS' Custom Products manager, on the innovations the company developed to protect the panels until they were in place and the difficulties that had to be solved in transporting and placing them in position.

Joe Manolovits was also quoted on the way NAS tested the curtainwall sections before they were put in place. "We built some big 25-foot by 34-foot test sections, sent them to the test center in Florida, and just about blew them apart until they were able to satisfy us. It took us longer than we had planned, but we knew that once we were sure we had the right system, we could meet our deadlines. That's the way it worked out."

More than one million pounds of aluminum were used in the building's curtainwalls. It houses more than 5000 people — more than some small towns. It was also erected with exceptional speed, going up in 30 months instead of the usual four years required for such a building.

This speed was achieved through implementation of a "fast track" system. The ad explained it in this manner: "We used a 'fast track' system which allowed construction to start before the drawings were finished. 'Fast track' is not a new method and it has its risks. The contractor starts building before the drawings are done, and gets committed on long-lead items. Northrop was hired, for example, when we had only rough sketches for the wall system."



ALUMINUM for the United California Bank curtainwalls was anodized in the Northrop Architectural Systems plant.

KATHARINE LEWIS, secretary, NAS Marketing, looks over the 16-page pull-out ALCOA ad which appeared in the 'Architectural Record' magazine.

Electro-Mechanical Division Starts Save Materials Program

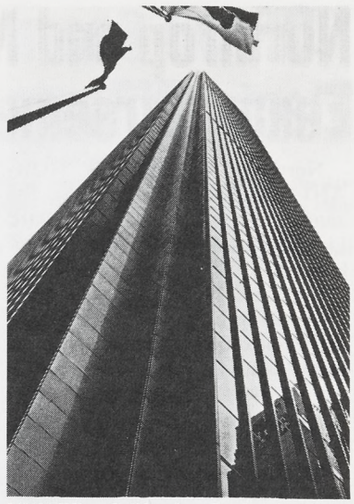
The Electro-Mechanical Division has launched a strong campaign to meet the challenge of the current nationwide material shortage.

"Northrop, like other companies, is facing a serious materials shortage," Don M. McInnis, division vice president, Operations, said. These include paper, aluminum, steel, lumber, petrochemicals, electronic parts and other items. These shortages are a serious national problem, as a U.S. Senate subcommittee pointed out recently. Even when commodities are available, the prices are rising dramatically."

The campaign will be conducted as an extension of the division Suggestion Award program, according to Joe Saline, committee chairman.

"For the remainder of 1974," Saline said, "we will reward any suggestion that results in a materials saving with an extra bonus. This bonus will be in addition to the regular suggestion award for the idea.

Saline added that the committee felt that considerable savings could be affected in production materials and supplies. "And the best — possibly the only — people who can do this are those who work directly with these materials. We are enlisting their aid."



UNITED California Bank Building, largest building west of Chicago, as it now stands in downtown Los Angeles.

Ventura Division To Take Part in Annual Space Fair

This coming weekend, Oct. 19 and 20, will see the fifteenth annual Space Fair take place at Point Mugu just a short distance away from the Ventura Division.

The more than 100,000 expected visitors will once again see the Navy's famed Blue Angels perform as features in the twice-a-day airshows.

The Ventura Division will again take part in the event with an exhibit featuring the products and capabilities of the division. On display will be the latest MQM-74C target drone and the Mark 30 Underwater Target. More than 100 exhibits will be on display.

The military airshow, which is the largest in the nation, includes a demonstration of air-to-air Sidewinder missiles, rockets and 20 mm cannon fire by the most modern aircraft in the nation's arsenal.

Visitors will also see a demonstration by an Antarctic para-rescue team and aerobatics by top civilian pilots.

Also, there will be a carnival midway with rides, games and refreshments.

The Space Fair is sponsored by the Navy commands in Ventura County as a combination military open house and charity benefit. Parking and admission are free with airshow grandstand seats just $1. Gates will be open from 9 a.m. to 5 p.m. with airshows at 10 a.m. and 2 p.m. each day.

Pt. Mugu is on Pacific Coast Highway between Oxnard and Malibu. From the Ventura Freeway, take the Los Posas Road to the ocean and Pt. Mugu.

NORAID Board of Directors Elects Officers for 1974-75

Northrop Corporation's NORAID board of directors, at the annual meeting elected Willard Lindstrand, who was president of last year's committee, as chairman of the board for the next year.

In taking over the new responsibilities of office in the Northrop in-plant charity organization, Lindstrand, manager, Aircraft Division Facilities, now heads a board which includes as members: Jack Bruce, corporate office; Paul Champion, Max Fayrweather, Paul Jacobs, Dan O'Halloran, H. H. Sweet, Marie Tully and Sal Xifo, Aircraft Division; Lloyd Jones, Electronics Division; and Doug Leavenworth, Electro-Mechanical Division.

The all-important NORAID committees serving as advisory groups for the board of directors at divisions and off-site locations will be made up of the following members during 1974-75:

Aircraft Division: George Matuskey, chairman; Floyd Boggus, Tom Brazil, Lucianna Clack, Ted Garvey, Bill Hayman, Glen Kasson and Jim Zimmerman.

Palmdale Facility: W. B. Weickersheimmer, chairman; R. B. Craik and Herb Johnson.

Edwards Facility: L. R. Ferguson, chairman; Frank Harrison and Betty Belcher.

Electronics Division: Dell Wyatt, chairman; Peter Casey, Roland Gagon, Nancy Wons and Donald Weaver.

Electro-Mechanical Division: Duane Baptiste, chairman; William Carey, Carl Jensen and Sally Moore.

Northrop Services, Inc., Huntsville: C. R. White, chairman; Marlin Sloan and Riley Ponder.

The new officers are: Paul Jacobs, president; Lloyd Jones, vice president; Ernie Boren, treasurer; Jo Roth, secretary and administrator; Phyllis Howard, deputy administrator; and Rudy Rivero, accountant.

First Flight of the F-5F Commemorative Caches

Commemorative caches honoring the first flight of the F-5F are now available through Personnel Activities for 35 cents each. The caches were designed by the NRC Stamp Club and were postmarked at Edwards AFB, on the day of the flight.

Two Children Rescued From Burning House by Employees

Billy Tuitama, Electro-Mechanical Division Manufacturing Control, joined two former Northrop Hueneme employees, in saving two children from burning in a house at Oxnard recently.

"My mother, Mrs. Faaiu, first noticed the burning house and began calling to the rest of us. My wife, Oso, awoke me," Billy recalled. "I was so sleepy I thought I was dreaming.

"But she got me up and my brother, Leroy, who was staying with us, followed me outside. The house across the street was blazing. A man staggered out the door, crying, 'Help me!' A woman broke an upstairs window and got out with two of her children, leaving two more inside.

"My brother and I were joined by Larry Hayes, a next door neighbor, who worked with us when we were with Northrop Hueneme. We broke down the front door. Smoke filled the house and we could hear children screaming.

"I told my brother to get down on the floor where there was less smoke. We crawled inside and found the kids. One was a boy four years old. The other was a girl seven. We took them out. The boy was unhurt, but the girl was burned. She will recover, fortunately."

Billy, whose real name is Piliopo, is a native of Samoa. He moved to Hawaii when his father joined the U.S. Navy in 1956. In Hawaii he was active in sports and won a football scholarship in 1962. He also developed into a versatile musician, forming his own trio to play for local dances, luaus and clubs. The trio will play for the EMD NRC Roaring '20s dance this month.

Billy formerly worked at Northrop Hueneme and transferred to the Electro-Mechanical Division two months ago.

IMPORTANT NOTICE
ALL MALES

Between ages 18 to 26 must register with the Selective Service — it's the law. Call a Selective Service Office for the nearest location to register.

EMPLOYEES VISITING the San Diego Zoo and San Diego Wild Animal Park during Northrop Days will see this group of Baringo giraffes. These animals are one of the over 5000 species which can be seen at the zoo from the guided bus tour.

Northrop Days Declared at San Diego Zoo and Wild Animal Park

Personnel Activities is offering a special savings package for those Northrop employees who have nothing planned, don't know where to go, or just want to stay close to home during the yearend holiday.

"Northrop Days" at both the San Diego Zoo and San Diego Wild Animal Park have been declared for Dec. 21 through Jan. 1, 1975 for all employees and their families with special savings on admission and all attractions.

At the zoo, the package includes entrance to the zoo, round trip on the Skyfari aerial tram, a 40-minute bus tour and admission to the Children's Zoo where the animals are close enough to cuddle.

During Northrop days adult tickets to the zoo are: $2.75, 16 years and over; juniors $1.25, 12 to 15 years; children 75 cents, 2 to 11 years. At the San Diego Wild Animal Park tickets are: adults $2; juniors 50 cents; and children 25 cents.

At the Wild Animal Park in San Pasqual tickets will include entrance to the 1800-acre wildlife preserve, Nairobi Village with 36 exciting shops, displays and exhibits and a 50-minute ride on the Wgasa Bush Line through the plains of Asia, Australia and Africa.

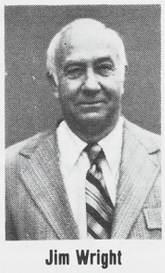
New to the Wild Animal Park is the Kilimanjaro Hiking Trail where visitors may enjoy animals at close range and walk through the natural wilderness section of the park.

Coupons, only one per family is needed, are available at Personnel Activities, Aircraft Division. Employees are reminded that with the Zoofari card they receive a 10 per cent savings at the Reuben H. Fleet Space Theatre in Balboa Park, San Diego Harbor Excursion and three Mission Valley hotels.

Wright Plans to Keep Busy in His Retirement

Jim Wright, manager, Finance, Northrop Pacific, Inc., has retired from the company after 20 years of service.

A senior member of Northrop Pacific, Inc., when it was formed in 1969, Wright began as a supervisor in Tabulating which was the forerunner of the present Data Processing Department. From there he was staff member in the Finance section at the former Nortronics Department; chief of Finance for the Northrop Space Laboratories where he helped organize and staff the Accounting section; manager of Business Planning at the Aircraft Division, and finally his present position at Northrop Pacific.



Jim Wright

His retirement plans include moving to Redding, Calif., where he will work part time at a property management organization of which he is a partner, and just plain catch up on a lot of fishing off his houseboat with his wife.

Harness Racing

Personnel Activities still has some seats left to the Harness Races for Saturday night, Oct. 19 at Hollywood Park.

The price of $2.50 includes admission to the clubhouse and a reserved clubhouse seat. The park opens at 6 p.m. First race starts at 7:45 p.m. and the last race is over by 11:15 p.m.

Tickets are available at Personnel Activities, Plants One and Three.

Ventura Division Ladies Win Ribbons at the Fair

A really big winner is what petite Diane Jacobs was in the recent Ventura County Fair where she, at last count, had won a total of 19 ribbons for her culinary skills.

At the same time while Diane was winning her awards while participating in her fourth fair, Louise Woods was winning her initial blue ribbon in the event.

Diane won most of her awards for her preserves and baked goods while Louise won her ribbon for her crocheted poncho.

Diane's Mexican hot sauce was also selected by the Ramirez and Ferhaud Chili Company, Ventura, as the winner of the Las Palmas Perpetual Trophy. Her name will be engraved on the trophy and she will receive a smaller one as well as other awards.

Diane's Awards

Her awards this year went like this: First places — pepper relish, apricot/cherry jam, chocolate cupcakes, spice cupcakes and pound cake. Second place — apple, peach, grape, mint and wine jellies, apricot/pineapple and cherry jams, pickle relish, date/nut bread and pineapple upside down cake. Third place — mustard pickles, coffee cake, rhubarb jam and orange/lemon marmalade.

"My canning and cooking all started out as a hobby. I just like to do it and I like to give the completed products away to my friends," said Diane.

She doesn't have any particular advice to those who would like to do this same thing. It is just entering and learning something new each year.

Studying Archeology

Right now her major outside interest is not cooking and canning, but, of all things, archeology. She is taking a course in the subject at Moorpark College and each Saturday finds Diane busy helping excavate the remains of what is believed to be one of the first chapels, in Ventura County.

During the week she works as a member of the Management Information Systems Department and attesting to her culinary skills, frequently brings her fellow workers her latest cakes, cookies, rolls and other goodies.

Louise, who was urged by Diane to enter the County Fair competition, plans to enter again after her initial effort.

Her beige trimmed in rust-colored crocheted poncho took several months to complete and is just one of the many such articles she has worked on in recent years.

During working hours Louise is secretary to Stiles Burke, manager, Division Business Planning.

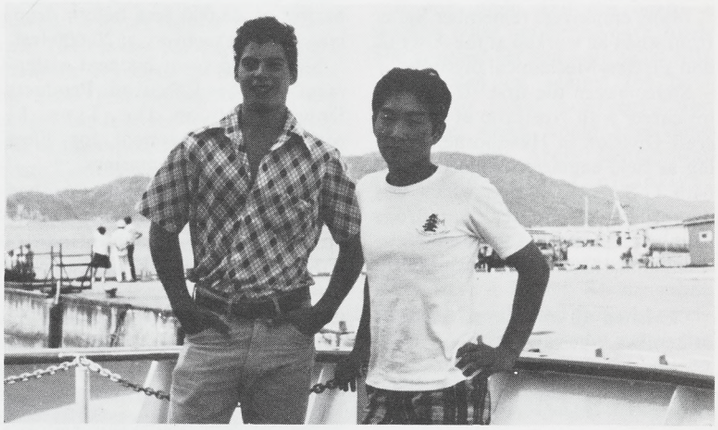
FAIR WINNERS are Louise Woods, left, and Diane Jacobs. Both won prizes at the Ventura County Fair. Louise for her crocheted poncho while Diane carried off 19 awards for her culinary skills. She entered 30 categories.

Registration Urged by Selective Service

Since the President and the Congress have discontinued inductions into the armed forces under the Military Selective Service Act, many young men are under the false impression that the requirement to register with Selective Service has been eliminated, according to Carlos C. Ogden, California director of Selective Service.

Those who may have inadvertently failed to register in compliance with the law should do so immediately, says Ogden, to assure the availability of an inventory of manpower in the event of an emergency.

Call any Selective Service office for your nearest location to register or for further information.



MARK GUADAGNINI, left, and his host brother, Yoshihiko Mori, on a boat cruise near Mikimoto Pearl Island during his Sister City visit to Yokkaichi, Japan.

Guadagnini's Son Visits Long Beach Sister City in Japan

Chosen to represent Long Beach in her Sister City, Yokkaichi, Japan, this summer was Mark Guadagnini, son of Frank Guadagnini, Aircraft Division manager, Project Planning, along with another student of Wilson High School and a teacher from Poly High.

In the competition were students and teachers from the five Long Beach high schools. They were selected by the Long Beach-Yokkaichi Sister City Committee after extensive interviews, tests and examinations.

Mark is active in student government at Wilson, and is a member of the football program, playing end and defensive back on the varsity team. He also starred in baseball as an outfielder, and was a member of the Chemistry Team.

He attended Brotherhood Camp, sponsored by the National Conference of Christians and Jews. His hobbies include all water sports, and he plans to enter the University of California of San Diego to study marine science.

On alternate years, Yokkaichi sends two students and a teacher to spend the summer with Long Beach families and are shown interesting sights in this city.

OFFICER FOREMAN, Security, checks badges at Gate 10 as Thomas Longmore, Allen Smith, Bob Darnell and Francisco Villaneda, all of Distribution Services, Aircraft Division, pass through the gate leaving for home after the day's shift on their bicycles. They ride bicycles five days a week with Longmore riding 5 miles round trip; Smith, 11½ miles; Darnell, 18; and Villaneda, 16. Each claims a substantial savings per month by riding their bicycles instead of using automobiles.

Sigler Retires After A 23-Year Career Starting at Hawthorne

Milo L. Sigler has been as "high, wide and deep" as any human being can travel during his 23 years at Northrop, which ended in retirement from the Precision Products Department in Norwood, Mass.

Many employees remember Sigler from when he worked at the Aircraft and Electro-Mechanical divisions.

Sigler began the first 10 years of his career with Northrop at the Aircraft Division in Hawthorne, working as field engineer assigned to the 64th U.S. Air Division which was comprised of fighter squadrons located in the Arctic, Iceland, Newfoundland, Greenland and Labrador.

"I visited all of them at one time or another," he says.

His engineering skills have taken him throughout the continental U.S.A. as a field engineer working on the F-89 fighter, which in 1954, brought Sigler to the "height" of his career by blasting through the sonic barrier at 45,000 feet before dropping to a fast recovery at 20,000 feet.

Sigler then spent his next assignment at the Precision Products Department on the Type 11 periscope drive system for Fleet Ballistic Missile submarines.

"I worked on every site they had including Spain, Scotland, Guam, Honolulu and the continental U.S.A. wherever the subs were berthed. I only missed working on one submarine out of the entire 41 designed and built," he said.

MILO L. SIGLER, center, shakes hands with Lee Engler, right, director of operations at PPD, while John Dearness, left, and Phil Rayberg of Quality Assurance look on.

It was during this period that Sigler went to the "depth" of his career during a full flotation buoyancy test in which the sub flooded all the ballast tanks and dropped rapidly into a test dive.

"I cannot say how far down we went due to the secrecy required, but there were an awful lot of nervous people," he noted.

He then represented Northrop at Cape Kennedy for navigational subsystems while on surface ship assignment for Fail-Safe programs, before concluding his career in the System Quality Management group at the Precision Products Department.

Sigler's retirement plans include traveling through the northeast part of the United States, a trip through his home state of Iowa, and visiting the exhibition in Spokane, Wash., before settling in Napa, Calif. for rest and recreation.

AUSA's Disneyland Tickets Available

Tickets are still available for the AUSA Family Fun Night at Disneyland, Friday, Oct. 18.

The night is sponsored by the Association of the U.S. Army. The organization, devoted to better service to Army personnel, has extended an invitation to all Northrop personnel.

Tickets are available from division Personnel Activities offices. The $4.75 price includes admission to all Disneyland attractions except shooting galleries. Included in the unlimited admission to attractions will be the new "America Sings" in which a patriotic eagle named Sam, conducts the audience on a musical tour.

CUTTING THE cake are Keith Davis and his bride the former Mid Williams following their wedding in August at Pala, Calif. Keith is a quality control engineer in Quality Assurance at the Electro-Mechanical Division and Mid is secretary to the plant manager at Northrop Pacific, Inc., Long Beach.

Big Game Fishing Is Family Affair With the MacCorkells

Florie MacCorkell, teletype operator, Electronics Division, Palos Verdes, and her 11-year-old son John Lee, have joined the ranks of big game fishermen following fishing excursions to Catalina Island.

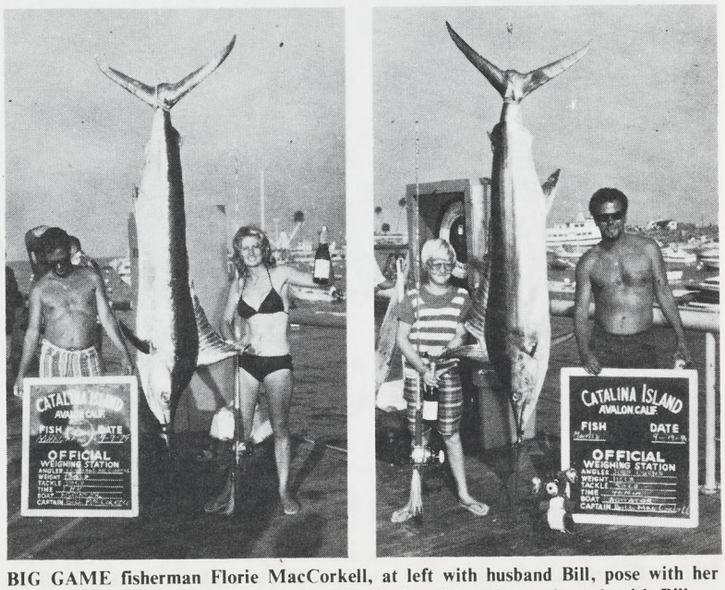
Florie Gets Her Fish

The MacCorkells, including husband Bill MacCorkell who also works at the Electronics Division Palos Verdes, were five miles out of Cat Harbor, Catalina, on Sept. 9 when Florie snagged her marlin. "I have never fought a fish bigger than two pounds, and believe me, this was a real war!" she said. One hour later Florie reeled in a 130-pound marlin.

Ten days later son John got his chance when he hooked a marlin 26 miles southeast of Avalon. With dad captaining the Agitator, John battled the 119-pound catch for 40 minutes before finally landing his marlin.

Bill had earned his big game fisherman title last year by landing a 129-pound marlin with Florie captaining the boat. "I would much rather be captain of the boat than a fisherman," she confessed.

THE LADY IS a champ! Thalya Kane of the Palmdale Facility has made a habit of winning the women's Tractor Stake Race held at the annual Antelope Valley Fair and Alfalfa Festival in Lancaster. She has entered seven years in a row and won the top prize four of those years, including 1974. The event generally draws five or six contestants who maneuver full-sized tractors over a slalom-like obstacle course. The best time wins. Thalya had never driven a tractor when a friend asked her to enter. After a few hours of practice driving, she went to the line and drove away with first place.



BIG GAME fisherman Florie MacCorkell, at left with husband Bill, pose with her 130-pound marlin, while son John proudly displays his 119-pound catch with Bill.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vechicles For Sale

Corvette, 1956, Power Glide, hard & soft tops, 15,000 mi. on reblt. 283 eng., orig., $3750. 213-371-4919.

Motorcycle, 1972 CL 350 Honda, 3500 mi., $700. 213-375-5893.

MGA, 1960, restored, 2 new tires & top, reworkable extra eng. block, other useable parts, $1100. 213-547-4163.

Camaro, 1969, 307 V-8, p/s, a/t, 32,000 mi., new tires, $1700. 213-630-3909.

Chevrolet, 1957, 6-cyl., std. trans., $100. 213-370-3821.

MGB, 1970 GT, new Perrilli radial tires, r/h, chrome whls., $3000. 213-346-5059.

Motorcycle, 1973 Honda CL-100, street lic., $325. 714-960-2027.

Olds, 1972 Cutlass Supreme, 2-dr. h/top, p/s, p/b, AM/FM, a/c, 50,000 mi. $2500. 213-836-6611.

Chevrolet, 1964 Malibu station wagon, 327 cu. in., good tires, $250. 213-320-6153.

Motorcycle, 1974 DT-250A Yamaha Enduro, ports polished, decarbonized, $900. 714-826-3449.

Motorcycle, 1970 Yamaha 125cc MX, new tires, 21" front rim, $350. 213-398-2314.

Lincoln, 1966, $675. 213-328-7989.

Mustang, 1967, 289 eng., power, factory sport whls., $1395. 213-832-3129.

Capri, 1973, V-6, 4-spd., AM-FM stereo, mag whls., $3000. 213-327-0263.

Triumph, 1972 Stag, convt. w/roll bar, p/s, p/b, p/w, stereo FM, $4250. 213-641-9230.

Motorcycle, 1970 Yamaha 250MX, new parts, $400. 213-540-0170.

Chrysler, town & country station wagon, new tires & brakes, $650. 213-676-5921.

Chevrolet, 1971 Malibu 2-dr. spt. cpe. 287, radio, p/s, $1650. 213-671-9371.

Volvo, 1972 4-spd. stick, air, bucket seats, AM-FM radio, radial tires, mags, $800. 714-778-4517.

Motorcycle, 1973 Kawasaki 125 Enduro, many extras, under 200 mi., $450. 213-325-1190.

Motorcycles, 2 Honda Trail 70, $300 ea. 213-375-7265.

Olds, 1968 Belmont 88, 4-dr., a/c, p/s, p/b, auto. trans., radio, $395. 213-379-9844.

Chevrolet, Malibu, 1967, 283 eng., p/s, r/h, bucket seats, new radiator & paint, $550. 213-973-8951.

Olds, 1973 Cutlass S, p/s, p/b, a/c, rally whls., 13,700 mi., $3275. 213-649-3402.

Miscellaneous For Sale

Tailgate, for 1971 Ford pickup, never used, $20; spare tire mount, front bumper, $10; rear cab window w/gasket, $15. 213-378-7846.

Tape Deck, Uher (German) mod. 9500, stereo, 4 spds., echo monitor, s-o-s, s-w-s, $200; snow skis. Head mod. 360, 205 cm long. Marker toe, Genze heel, $100. 213-820-1093.

Camper shell, custom blt. 8' bed, cabinets & closet, dble. drs., $399. 213-892-1415.

Membership, Jack LaLane. 5-year plan, $350. 805-942-0075, 213-679-3373.

Speed Boat, 14', flat bottom, custom chrome, V dr., adj. plate, $450. 213-679-0957.

Reverse Wheels, 4, deep dish chrome, 14", 5-lug size, 1 yr. old, $30. 213-371-0621.

Audio-Technica, diamond Shibata Stylus AT128, tapered cantilever dual magnet cartridge, $20. 213-371-7958.

Stove, elec. Hotpoint, $20. 213-329-9037.

Bird Cages, 2, stand & hang up types, almost new, $5 & $12. 213-371-4506.

Sofabed, Sealy, queen size, 76" lg., like-new mattress, $100. 213-329-9123.

Magazines, National Geographic, from 1966 to present, $10.; typewriter, Underwood elec., lge. desk type, $50. 213-326-5731.

Miscellaneous For Sale

Travel Trailer, Kenskill 17', self-contained, 2-way refr., Ezy-Lift hitch & hookups, $950. 213-378-1026.

Piano, Kimball consolette, 38" high, red maple, $850. 714-842-5968.

Rugs, 2 pcs., wool, 12 x 9, $30 ea. 213-327-6918.

Camera, Canon QL-17, used 3 times, $50. 213-372-4691.

Ski bindings, $15. 213-378-6092.

Aquariums, equipment & fish, 4 sizes, $20 - $80. 213-324-8496.

Drafting Machine, Bruning w/2 scales, $85. 213-327-4267.

Aquariums, 10, 15, 20 gal., access. included, $16., $38., $32. 213-675-7357.

Skis, Fischer superglass compts., 205 cm & salomon 502 bindings, '73 model, $95. 213-372-0038.

Wet Bar Unit, won on game show, Mediterranean design, sink, fountain, 25" x 59" x 36", $175. 213-883-2258.

Lavatory Sink & toilet, used, $25. 213-379-4517.

Engine, Rover gas turbine jet, 90 h.p., 90 lbs., $4000. 213-541-3844.

TV, 1971 25" RCA color, walnut cabinet, $125. 213-649-5348.

Boat, 22', inbd. eng., tandem trailer, $500. 213-328-3182.

Sewing Machine, Singer, touch & sew, many extras, $200. 213-377-4261.

Sofa, 9', deep gold crushed velvet, Chesterfield-style, $150. 213-532-2158.

R. C. Powered Trainer, sr. box fly 52" span, for .15 to .35 eng., 3-channel radios, $30.; sailplane, radio control, ASW-17 scale, 11' wingspan, $80. 213-377-2543.

Organ, Conn Rhapsody, full pedals, mahogany, bench, $785. 213-475-3484.

Stereo, wide band AM-FM radio, turntable, tapejacks, 2 14" spkrs., Magnavox, 6 mos. old, $125. 213-671-9371.

Land Camera, Polaroid 360, electronic flash, $60. 213-327-0263.

Typewriter, SCM Electra 120, portable elec. w/case, $95. 213-378-2127.

Speaker Enclosure, Carlson, 15" woofer, mid-range horn & tweeter, $100. 213-676-3050.

Clarinet, wood, Penzel-Mueller, case, $50. 213-376-2324.

Roll-a-way Beds, 2, $25. 213-675-0858.

Bass Drum, Ludwig, & chrome snare, $130. 213-672-0855.

Tires, 4 & rims, 600-13, fit early model Toyota, $35. 213-542-2390.

Movie Outfit, 8mm Bell & Howell camera, zoom lens projector, film splicer, $32. 213-645-1489.

Skis, Fisher, alu., size 180, $80; ski boots, size 7, foam injected, Lange, $43. 213-324-6717.

Captains Chairs, 4 maple, $100. 213-675-1000.

Golf Clubs, 1, 3, 4 wood, Wilson Top Notch, 2 - 9 irons, sand wedge, putter, golf shoes, black, size 9, $50. 213-675-0588.

Sewing Machine, Brother, attachs., 1 yr. old, walnut cabinet, seldom used, $75. 213-541-3000.

Shopsmith, w/jigsaw & jointer attachments, other access., $230. 213-377-3806.

Wood Lathe, $25. 213-834-3290.

Communications Receiver, Hallicrafter SX 130, AM-SW, $95. 213-599-7009.

Pillow, floor-type, 3' x 5', matching throw pillows, $25; toys, assorted Fisher-Price, Kenner, $5 - $10; oil painting, 2' x 4', modernistic beach scene, $25. 213-530-3521.

Tape-Deck, Craig, 8-track, stereo w/FM/AM radio, 2 yrs. old, $60. 213-372-4113.

Camper, 1969 9' Globe, many extras, $900. 213-324-8428.

Bicycle, ladies, 6 mos. old, 3-spd., Huffy, $50. 213-541-1331.

Jazz Bass, Fender, hard shell case, $250. 213-370-8229.

Wanted To Buy

Drum Set, cymbals & hi-hat & bass pedal for beginners. 213-941-1865.

Kitchen Stove, small, must be reasonable. 213-379-2649.

Baritone Horn or Euphonium, used, good condition. 213-377-3806.

Things Are Looking Much Better For Linda Barton's Next Vacation

Linda Barton, Northrop Services-Houston, is convinced that vacations should be evenly divided between a one-week trip and one week to recuperate.

On her recent vacation things went like this:

The first day she pulled her boat down to a lovely fishing spot — and ran the boat aground in the shallows. Trying to get it loose, with her sister and nephew to help, she caught her foot between the steering rod of the motor and the side of the boat. Getting out of that, she got "landed" instead of the fish when her nephew's lure backlashed into her hair. It had to be cut out, "but I needed a haircut anyway," she said.

Starting home, she hit a blue jay with the windshield of her car and had to by-pass to a veterinarian to get its leg set. Leaving there, she had a flat. Fortunately she had a spare, but unfortunately it was not on the rim.

After stopping at her father's home to present him with the recuperating bird, she started home with the gas gauge registering half full. This meant nothing, for it had been broken for two years.

So she ran out of gas. But typical Texas ingenuity provided a solution. She would drain gas from the boat motor and put it in the car. But she couldn't get the gas cap off.

It was night and she heard a stealthy noise beside the dark road. She grabbed her son's air pellet rifle and backed up against the boat trailer to repel boarders. Her challenge, which would have done credit to any Army sentry, was answered with a plaintive, "Moooo," from a curious cow.

Shortly after a driver stopped and got the gas cap off for her, but she didn't have a funnel. So she made one out of cardboard that was so efficient that she got some gas in the car's tank — although she got so much on herself that the car would have run farther if she had gotten more into the tank.

Despite these troubles, she is not dismayed. "Things are getting better," she said. "You should have been along last year —!"

Lost

Pin, 30-year, tie tack. Aircraft Lost & Found, ext. 1972 or ext. 2182.

For Sale or Trade

Camaro, 1968 Rallye Sport, a/t, r/h, $1100, or trade for good transportation car. 213-374-6585.

Blue Chip stamp books $2. per book or trade for S&H Green Stamp books. 213-676-0758.

Boat, 13½' runabout, trailer, 40 h.p. Mercury motor, life jackets, cushions, $300. or trade for 14 or 16' fishing boat & 5 - 10 h.p. motor. 805-942-3573.

Rentals Wanted

House, 3 - bdrm. in Palmdale area w/garden area. 213-779-9776.

Personals

Thanks to all my friends throughout the Johnson facility & Aircraft Div. for all the kindness & sympathy at the recent loss of my daughter, Linda Smith. MARGE SCHROP.

Many thanks to all my friends & co-workers at Northrop for the gifts & thoughtfulness upon my retirement. JACK C. MORGAN.

I wish to thank everyone for the kindness and sympathy extended at the time of my husband John's death. MRS. JOHN SZOKE.

Personals

Sincere thanks & appreciation to my friends & co-workers at Northrop for the wonderful dinner & thoughtful gifts at my retirement. ROSE RICHEY.

Child Care Offered, my home, day hours, lunch & snacks provided, fenced yard, pre-school age, Redondo Beach near TRW. After Nov. 1. 213-370-4701.

Free

Pup, German shepherd, 10 wks. old, male, housebroke, all shots. 213-934-7404.

Dog, poodle, male, black & brown, 1 yr. old, all shots. 714-968-2791.

Kittens. 714-734-0546.

Ride Wanted, Offered

Ride needed, Rosecrans & Highland to Plant Three, 8 a.m.-4:42 p.m., until buses start running. 213-545-3509.

GRAND PRIZE winner Otis Thompson, master mechanic, Alameda facility, accepts keys to 1974 Pinto Runabout from R. D. Lovell, vice president, Factory Operations, and Jim Jones, left, NRC vice president. Over 45 persons were prize winners at the All-Northrop Family Picnic on August 25.

Ride Wanted, Offered

Car Pool or ride, 7 a.m.-3:42 p.m., Glendale-Burbank area to Plant One or Two, will pay compensation, Aircraft ext. 2363, 213-842-9234.

Car Pool, Canoga Park Woodland Hills area, to Engineering Ctr., 7:30 a.m.-4:15 p.m. Aircraft ext. 2296, 213-348-7996.

NORTHROP NEWS

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Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

Dodge, Kahler Head Service Award Roster

Service awards will be presented to 37 employees throughout the Electronics Division during September and October and heading the roster are Ervin Dodge and Douglas Kahler who are observing their 25th service anniversaries.

Dodge, supervisor, Stores unit, Hawthorne, began his career as a stock clerk at the main warehouse facility which was then located in Lynwood. He held the positions of leadman and assistant foreman prior to joining the Nortronics Department when it was formed.

Joins Company as Assembler

Kahler, engineering technical assistant, Digital and Communications Development section, joined the company as an assembler on first the B-35 conversion to jet power program before moving into the Nortronics Department.

Other personnel receiving service awards are: 20 years — J. A. McCormick, Palos Verdes, and Edward F. Sullivan, Jr., Sunyei Iha and D. W. Bottolfson, Hawthorne. 15 years — James Tresevant, O. B. Holquin and O. T. Vanderpool, Hawthorne. 10 years — W. O. Gray, Georgia M. Meats, Ralph D. Bates and Donald E. Zavodnik, Palos Verdes; L. G. Farrance, T. J. Brown, Clifford Getz, J. E. Rheins, Robert Stockmon, C. I. Matthews, P. J. Casey, Warren W. Weimer, John T. Velez and E. J. McCreary, Hawthorne. 5 years — J. P. Coyne , Ronald P. Casapulla, Donald E. Miller and J. E. Playter, Palos Verdes; J. E. Gleason, C. B. MacConnell, W. W. Flood, L. D. Baldwin, W. A. Rice, R. B. Adams, Thomas C. Leighton, Gerald E. Berger, Robert H. Rutherford, and R. M. Scime, Hawthorne.

GATE Project

(Continued from page 1)

40 ships, 13 aircraft, balloons and satellites participated in GATE.

"The Omega-Inertial system provided the NOAA aircraft involved with a scientific measuring capability that no other aircraft enjoyed." Taylor noted. "They were able to compute courses within one nautical mile under all conditions and measure velocities to within one knot."

Brennan further noted that this experiment validated Northrop's concept of integrating Omega and Inertial systems to provide previously unattainable navigation accuracy and this concept applies to any commercial or military aircraft.

SNEAK PREVIEW of some of the handcrafted items that will be offered at the NRC Arts and Crafts Fair Saturday, Nov. 16, is made by, from left, Mike Michels, Bill Greenwood, Lois Paris, Chuck Pristas, Jim Melton, and Shirley Wilson, all members of the planning committee. Applications for booths at the fair may be picked up in Personnel Activities. The fair will be held at the NRC Clubhouse.

Arts and Crafts Fair Scheduled For November

Handcrafted items made by Northrop employees will be on display and sold at the NRC Arts and Crafts Fair, Saturday, Nov. 16, from 10 a.m. to 6 p.m. in the NRC Clubhouse.

Hobbyists from the community as well as employees from all divisions are invited to participate in the day long event which will also feature exhibits by various NRC clubs.

Applications for a booth may be picked up at the Personnel Activities office and returned with any fees applicable, no later than Nov. 1. For application information contact Lois Paris, ext. 1791, or Mike Michels, ext. 4896.

Northrop Dakota, Inc. Softball Team Wins Third Place at State Tourney

Northrop Dakota, Inc., finished its best season yet in industrial softball action by capturing third place in the North Dakota State Amateur Softball Tournament held in Bismarck during August. A field of 48 teams competed for the title.

Led by player-coach Ron Holderman, the Northrop squad lost a narrow semi-finals game to the eventual state champion, Tolna, 17-16, but came back to down GTA of Oakes, 14-7, for the third-place trophy. Northrop Dakota wound up with a 46 win, 20 loss record for the season.

Members of the Northrop Dakota, Inc., team in addition to Holderman were Gayland Frye, Harris Berg, Terry Werlinger, Fred Holderman, Roger Halverson, Layne Lindberg, Rodger Werlinger, Manny Marsette, Roger Frye, Terry Wilber, and Tom Werlinger.

Travel Club Plans Hawaii Trip Meeting

The NRC Travel Club has scheduled a pre-departure meeting Oct. 22 in the NRC Clubhouse at 7:30 p.m. for those persons taking the yearend holiday golfers tour to Hawaii.

A few seats remain for the tour which includes four islands, all transportation, sightseeing, hotels, and five rounds of golf for the golfing enthusiasts. Tour price is $479 for non-golfers, $561 for golfers. Deadline for reservations is Nov. 6.

Bill McCann's Son Headed First U.S. Athletes' Tour of Romania, Mongolia

For Tom McCann, 28-year-old son of Bill McCann, manager, Shipping unit, Hawthorne, the past two years have been the most educational time of his life.

As a highly successful wrestling coach at Kearney High School, Omaha, Neb., Tom has been selected twice to coach high school, and college all-star wrestling teams on tours to Romania and Mongolia — both Communist countries. In both instances, this marked the first time American teams of any kind had visited these countries.

Tom McCann

Tom, a former champion wrestler himself in his school days at Aviation High School, Manhattan Beach, El Camino College, and Adams State University, Colo., led a team of Nebraska state all-star high school wrestlers on a two-week tour of Romania in the summer of 1973.

The team visited five cities in Romania by bus, wrestling in each location while observing the countryside and customs of the people. "These kids learned more in two weeks than they will in four years of geography classes," he noted. He was especially mindful of the driving habit of their bus drivers who preferred to use their horns rather than the brakes.

This past July, Tom was again selected as head coach of an all-star team of high school and college level wrestlers for a trip to Mongolia. The all-stars hailed from California, Oregon, Montana, Pennsylvania, and New York.

"We left the U.S. on July 23 and arrived in Moscow. There we had a layover for a couple of days during which time we were allowed to work out in an Olympic-type village in Moscow."

A Mongolian airliner then picked up the travelers for a flight to the capital of Mongolia, Ulan Bator.

"I think the most profound experience I recall of either tour was when we were returning from Mongolia and were laying over in Moscow. It was during this time that President Nixon announced his plans to resign and the Russians were coming up to us asking what would happen to the United States. It made us all pretty proud to be Americans and told them that there wouldn't be any disruption."

In all, Tom visited nine countries during his tours.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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Johnson Returns To the Division, Gets New Post

Nils E. Johnson has been appointed director, Employee Relations and Employment, according to H. L. Janssen, manager, Division Relations and Services Department.

Nils Johnson

Johnson returns to the Electronics Division after more than two years with Iran Aircraft Industries and Page-Iran. He was most recently director of Industrial Relations at the latter overseas assignment.

He will be responsible for the functions of Employment, Personnel Records, EEO Administration, Personnel Services and Activities, Medical, Food Services, Personnel Counseling and Grievance Administration.

NRC Golfers Schedule Christmas Tournament

The annual Electronics Division NRC Christmas Golf Tournament will be held Dec. 26 and 27 in Hemet with play taking place at the Massacre Canyon Country Club and Soboba Springs.

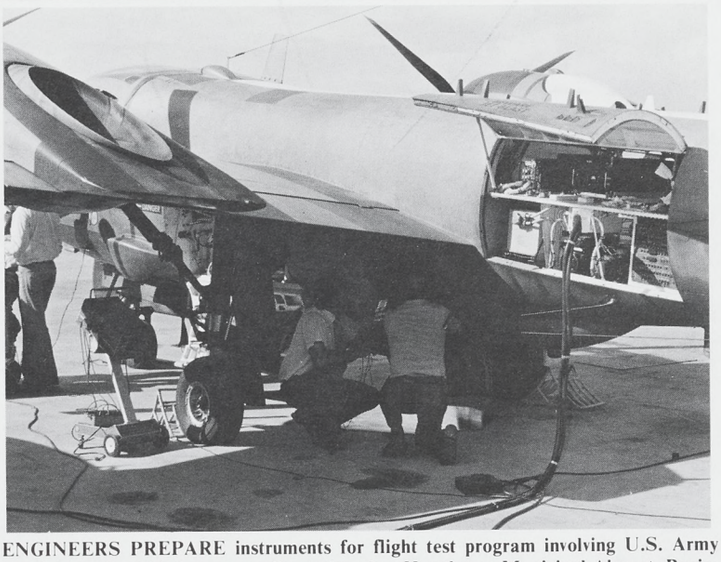
Tee off time for the Massacre course Dec. 26 will be 9 a.m., and 7:30 a.m. for Soboba Springs the following day.

Final Bloodmobile Visit Planned for December

The final and possibly most important Blood Drive of the year will be held Dec. 11, from 9 a.m. to 1:30 p.m. at the Hawthorne facility, according to Arnah Pakes, Medical.

"Past years have shown that the need for a substantial supply of blood is highest during the holiday period when the accident rate increases, so we are urgently requesting that all employees donate," Arnah said.

Blood donor appointment cards will be distributed with paychecks Nov. 29, Arnah further noted, and if you do not receive one contact the Medical office on ext. 261.



ENGINEERS PREPARE instruments for flight test program involving U.S. Army OV-1 aircraft which is temporarily stationed at Hawthorne Municipal Airport. Beginning Dec. 10, the OV-1 will be used to test the AIDATS (Army Inflight Data Transmission System) which is being modified under contract by the U.S. Army.

Air Force Association Drive For Members Nears Deadline

Applications for entry into the Airpower Chapter of the Air Force Association may still be submitted through Nov. 22 during the membership drive sponsored by the SAMSO Air Force Station.

The AFA, nationally known for its support to aerospace programs before Congress, is soliciting the assistance of industry in increasing its membership. The AFA provides a critical communications channel with the community.

Memberships are $10 and include a subscription to Air Force Magazine. Contact the campaign chairman Jim Taft, ext. 243, Palos Verdes. Application packets with AFA addressed envelopes will be returned for each individual.

RECENT VISITORS to Northrop Dakota, Inc. were members of the Electronics Division headed by Harold E. Beadle, vice president, Northrop Dakota. While there he presented a 20-year service award to George Downs, vice president and plant manager, and a 10-year service award to Greig Ryan, supervisor, Quality Reliability and Test. Pictured from left are, Ray Smith, general supervisor, Photo, Reproduction and Tech Data Branch, Electronics Division; Lee Finstad, supervisor, Finance and Administration, Northrop Dakota; George Downs; Harold Beadle; Greig Ryan; and H. L. Janssen, manager, Division Relations and Services Department, Electronics Division.

Cardinal I System Being Evaluated By U.S. Air Force

The Electronics Division is currently participating in a U.S. Air Force Flight evaluation to collect data on six competing Omega navigation receivers, according to Bob Jacalone, Marketing manager for Omega.

"The flight evaluation by the Air Force is designed to collect Omega data from the six different manufacturers in order to generate specifications," Jacalone said. "This in turn would lead to a test and evaluation phase probably involving two contractors with hardware distributed to Air Force commands."

Flight tests using a Boeing C-135 began in early November and were scheduled to continue utilizing the NASA radar range in Bermuda for two weeks beginning Nov. 18.

The Electronics Division's Cardinal I receiver is one of four automatic receivers in the evaluation along with two manual receivers. "Our eventual goal," Jacalone explained, "is the production phase for quantity procurement for airlift type aircraft."

Following the Bermuda testing, the Air Force plans further evaluation flights at Kirtland Air Force Base, N. M., Dec. 1-15 with a decision coming then whether to continue.

The division was also a participant in the Omega Symposium at the Institute of Navigation in Washington, D.C. this month.

NRC Skiers Planning For Winter Outings

The Northrop Ski Club will hold its monthly general meeting on Thursday, Nov. 21 at Lococo's in Manhattan Beach at 8 p.m. Signups for the planned Mammoth ski trip Dec. 6 to 8 will take place during the meeting.

Information for future trips to Squaw Valley, June Mountain, Lake Tahoe, and other sites, will also be available.

Featured at the meeting will be snow skiing movies and a slide presentation on Wrightwood (Big Bear) property. Everyone is welcome to attend. Contact Terry Dickson, commissioner, Electronics Hawthorne ext. 242.

Jones Stresses Benefits of International Defense Systems

Multinational cooperation in the development, production and management of future defense systems is necessary, desirable and inevitable, Thomas V. Jones, Northrop president, told a world gathering of military, government and aerospace industry leaders at the World Aviation Conference.

"Technology, creativity and management expertise are not national resources; they are global resources," Jones said. "And we cannot afford, individually or collectively, to duplicate research, creativity or technology for real or imagined nationalistic purposes."

Jones pointed out that collaborative multinational ventures are often organized by governments for political reasons, with individual governments trying to look after the interests of their own industries.

Success for Customer

"If our customer succeeds we will succeed," he told the industry leaders.

Looking ahead, Jones said that some of the necessary changes needed to remedy this situation are already beginning to occur. He cited the U.S. Air Force Air Combat Fighter (ACF), which is also under consideration by four NATO countries, as a primary example.

Earlier this year, U.S. Secretary of Defense James Schlesinger said that if the ACF is selected by the NATO countries, a cooperative European-U.S. production program will be established.

"This represents a profound change in U.S. policy, and provides the opportunity for the first time for a truly trans-Atlantic multinational development and production program on a new weapons system," Jones said.

He told attendees the key to this type of multinational program is "single point responsibility."

Jones added, given the demonstrated management capabilities of any number of companies in the U.S. and Europe, it does not matter which one is the prime contractor — as long as it is one, he emphasized.

"Experience has indicated that it is neither necessary nor desirable to establish for each multinational project a new business entity frequently created for political convenience, but with too little regard for the business efficiency needed to make the whole concept work," Jones said.

"I firmly believe the political leaders in every country would prefer to entrust their national security and their budgets to a strong multinational industrial team — with leadership and clearly defined lines of management and responsibility — rather than to a committee of manufacturers working in a way in which the responsibility, the authority — and the outcome — are all open to question," he concluded.

Northrop Pilots Receive P-666 Club Membership

Bill Brake, Aircraft Division Flight Support Operations, has been accepted as a senior member of the Piaggio 666 Club after hitting the 1000-flying hour mark in a Piaggio.

He was awarded a plaque and a badge featuring the crest of the Piaggio Company and the figure 1000. He is number one pilot of the club, worldwide. Jack Miller, another Northrop pilot, is number three.

Eddie Hahn, Dale Johnson and Gordon Madison, also Northrop pilots, were accepted as charter members.

The P-666 Club, established one and a half years ago, has about 70 members to date. Ordinary membership is open to all pilots, both military and civil, who can prove to have piloted a Piaggio aircraft for at least 666 flying hours. Pilots with over 1000 flying hours become senior members.

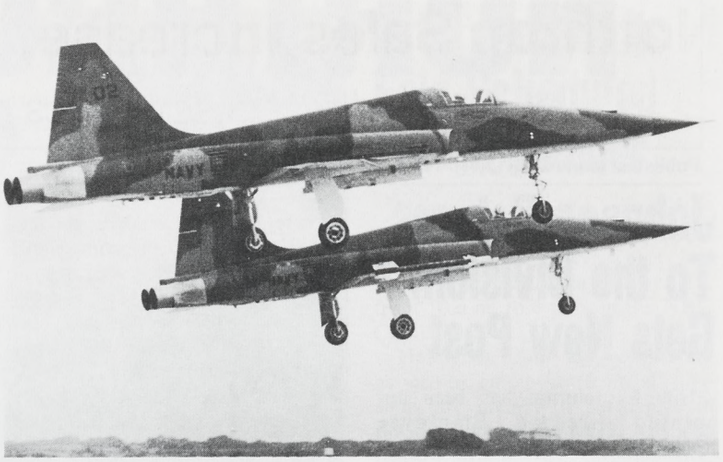
Gurnee Moves to Executive Position

William H. Gurnee Jr., has been promoted to executive assistant to the president.

He served as staff assistant to the president since July 1966 and had previously been assistant to the senior vice president at Northrop from 1963 to 1964.

In his new duties, Gurnee will serve as the company's principal representative in its relations with government, trade, and industrial organizations and committees concerned with government-industry procurement and other related policies and practices.

He is a graduate of the U.S. Military Academy at West Point and the Harvard Business School. In 1957, he graduated from the Industrial College of the Armed Forces.



PAIR OF NORTHROP F-5E Tiger II fighters arrive at Miramar Naval Air Station, where they will be used by the Naval Fighter Weapons School to simulate flight characteristics of enemy fighters in air-to-air combat training of USN fighter pilots. During their first two weeks at Miramar NAS, three F-5Es logged 37 sorties.

Productivity, Inflation Are Main Topics at the AFCMD Meeting

Improvements in management and cost avoidance by the aerospace industry and the Air Force are increasing productivity and helping counter the effects of inflation.

That was the consensus after industry leaders, including George F. Douglas, senior vice president, Administration, and Jack Mannion, vice president, Aircraft Division Administration, met at Kirtland AFB, Albuquerque, N.M., with Major General Abraham J. Dreiseszun, commander of the Air Force Contract Management Division.

"Our new management programs, developed and expanded over the last several years, have increased our confidence that the best interests of the government are being served at contractor facilities," General Dreiseszun said. "These programs are making it possible to identify problems early so we can find solutions together, before they impact on productivity and costs."

A part of Air Force Systems Command, Contract Management Division acts as the primary Air Force agency performing contract management functions at Northrop and 19 other major defense plants.

The division evaluates contractor management systems and practices to ensure efficient and economical operations, and supports Air Force system program director and buying agencies of the government in the acquisition of major weapon systems and other equipment.

"Because of the cost squeeze and the need for quality weapon systems based on the best technology available," General Dreiseszun said, "industry and the Air Force must continue improving the new environment of cost conscious management we have created."

He said management improvements have included better joint overhead surveillance which resulted in calendar year 1974 savings in excess of $24 million; improved accountability and increased attention to the proper use and maintenance of government-owned materiel and equipment in the hands of contractors; procedures to identify and correct errors before post-production inspection of hardware; and the upgrading of the skills of Contract Management Division personnel.

Ramsey Appointed To Public Relations

James W. Ramsey has been appointed corporate communications administrator for the Electronics Division.

Ramsey will be responsible for publicizing products and activities in selected news media, handle employee communications, including Northrop News, and corporate public relations programs for the Electronics Division.

James Ramsey

He served as director of Public Relations for Frontier Airlines, prior to joining Northrop, and earlier, was managing editor of Aviation Daily and staff writer for United Press International. A former USAF F-86 pilot, Ramsey was graduated from the University of Wisconsin. He is based at the Palos Verdes facility.

Northrop Sales Increase, Third Quarter Earnings Up

Thomas V. Jones, Northrop president, in releasing both third quarter and nine months results, noted that the company's continuing improved overall performance reflects an increasing worldwide demand for high-performance, low-cost tactical defense systems, a business area in which the company has specialized for the past 20 years.

Net income for the quarter ending Sept. 30 was $5,002,000, as compared with $2,327,000 for the comparable period a year ago. This was equivalent to $1.36 per primary share, as compared with 59 cents for the third quarter of 1973. Fully diluted earnings per share were $1.17, as compared with 52 cents a year ago.

Net sales for the third quarter totaled $210,458,000, as compared with $179,454,000 for the comparable period a year ago, an increase of 17 per cent.

Net income for the first nine months of 1974 was $12,207,000, an increase of 91 per cent over the $6,408,000 reported for the comparable period of 1973. This was equivalent to $3.25 per primary share, as compared with $1.59 for the first nine months of 1973. Fully diluted nine months earnings were $2.82, as compared with $1.41 a year ago.

Net sales for the first nine months of this year totaled $609,957,000, a 31 per cent increase over sales of $467,128,000 for the comparable period last year.

Defense Planners

Jones pointed out that defense planners around the world are now seeking low cost weapon systems that meet current and future defense requirements within budgetary constraints. The company has already produced more than 2200 lightweight fighter and trainer aircraft of this type, and has orders for an additional 515 fighters.

Northrop's newest fighter aircraft, the YF-17, is currently competing in the multi-billion dollar U.S. Air Force Air Combat Fighter program, and is also under consideration by a number of NATO nations as a replacement for existing fighter aircraft. In addition, a carrier-suitable version of the YF-17 is being proposed jointly by Northrop and McDonnell Douglas to meet the U.S. Navy Air Combat Fighter requirement.

Jones attributed the increase in sales over the nine-month period to stepped-up deliveries of the company's F-5E International Fighter. A total of 146 Tiger IIs had been delivered as of Sept. 30, 98 of which were delivered during the first nine months of this year. A two-place version of the F-5E is now in flight test at Edwards AFB, Calif.

In releasing the figures, Jones also noted improved operating margins, increased interest income and minimal interest expense as significant factors contributing to higher earnings.

Backlog

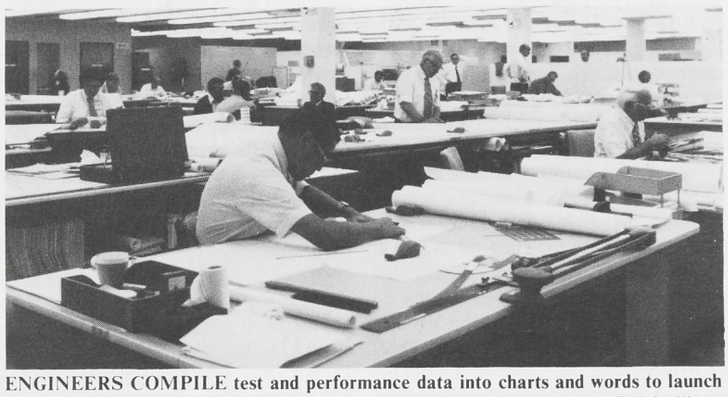
Northrop's order backlog at Sept. 30, 1974, stood at $1,093,072,000, 15 per cent higher than the $950,924,000 backlog a year ago.

As of Sept. 30, 1974, there were 3,596,341 common shares of stock outstanding, as compared with 3,747,950 a year ago.

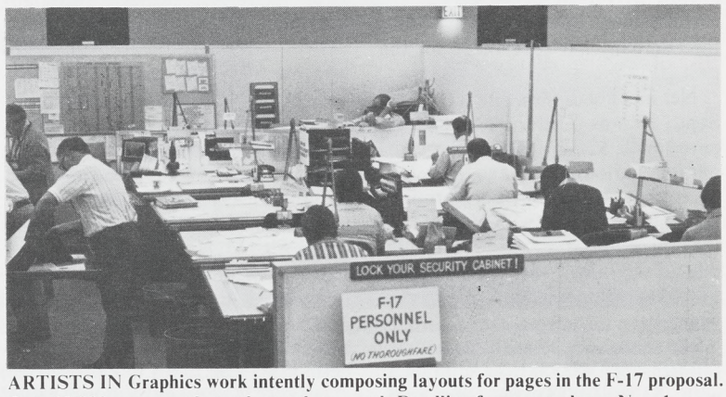
THE NEWEST NORTHROP advertisement in the company's strategic marketing campaign is now appearing in Business Week, Time and U.S. News & World Report. The Northrop T-38, F-5A, F-5B, F-5E and the YF 17, all products of the long-time partnership of the U.S. Air Force and Northrop, are shown as they appeared on display at the YF-17 rollout. The partnership spans 20 years, more than 2200 aircraft, which have been delivered on time and on cost.

ON TIME, ON SCHEDULE

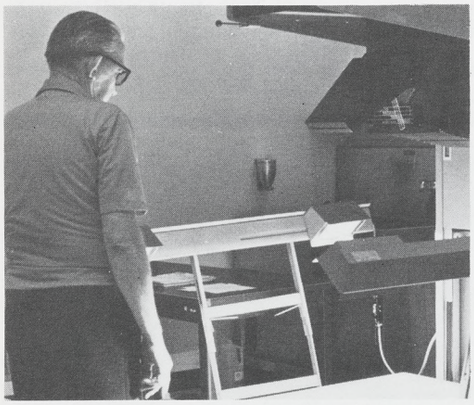
Northrop Employees Deliver F-17 Proposal



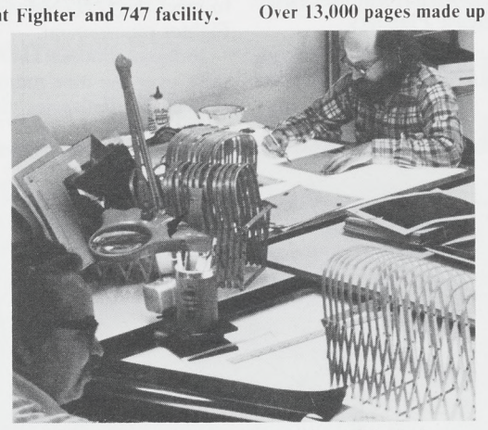
ENGINEERS COMPILE test and performance data into charts and words to launch the F-17 proposal effort in the Aircraft Division Lightweight Fighter and 747 facility.



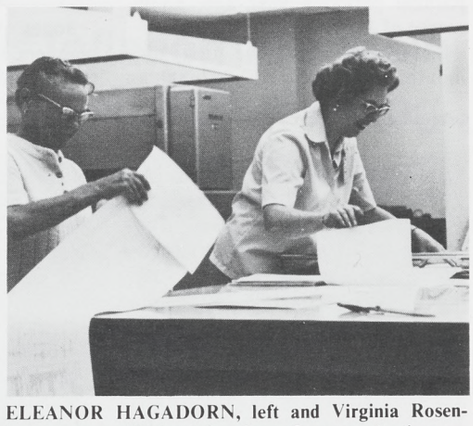
ARTISTS IN Graphics work intently composing layouts for pages in the F-17 proposal. Over 13,000 pages made up the total proposal. Deadline for proposal was Nov. 1.



BOB WEDGE operates Itek machine which produces enlargements, rapid prints, and reductions of line art.

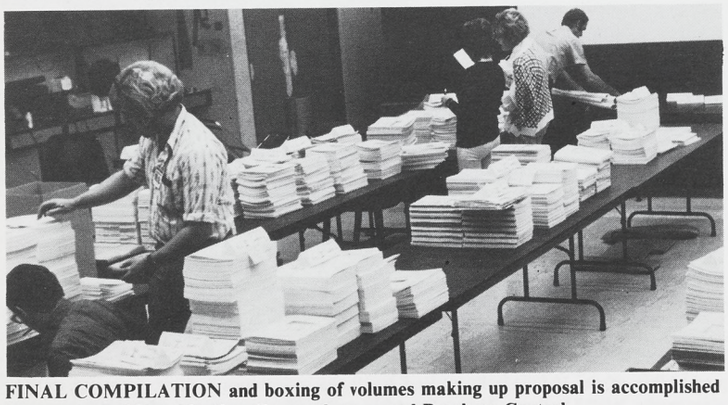


HARRY PEREZ (foreground) and Jerry Weidenborner make negative layouts in Master and Stripping section.

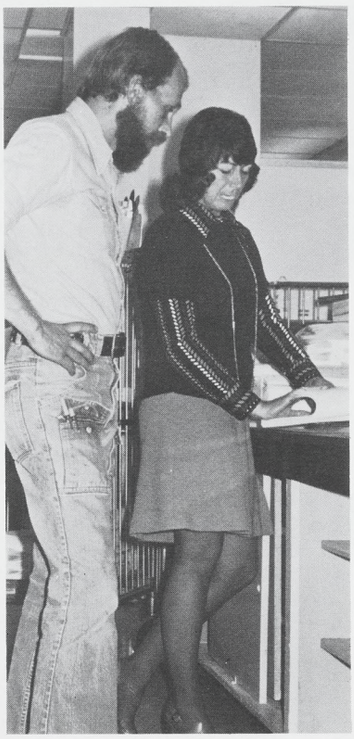


ELEANOR HAGADORN, left and Virginia Rosenkranz separate fold-out drawings after reproduction.

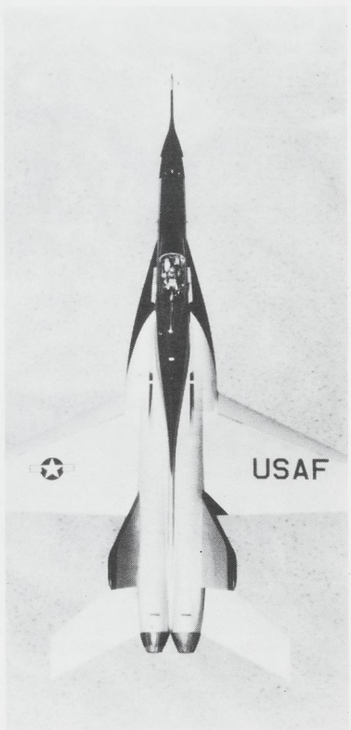
SEPARATING pages into volumes requires the talents of, from left, Hank Frost, Debbie Fisher, Aggie Reckard and Wilma Olson.



FINAL COMPILATION and boxing of volumes making up proposal is accomplished by personnel of Reproduction, Proposal group and Brochure Control.



KAY MELENDY and Gary McClellan give final check to finished volumes of the proposal which consisted of 101 separate volumes. Over 1.25 million impressions of printing went into proposal.



THIS IS THE F-17 for which proposal people worked so hard. Pilot on test flight may be seen through the clear bubble canopy designed to afford all-around vision at eye-level and above.

Flying Wing Flies Again! Only In Competition in Glider Form

The Flying Wing flies again! In fact, the air above Sepulveda Basin on a recent Sunday was full of the unusually configured aircraft.

However, the aircraft were all models and all were participating in the Eighth Annual Flying Wing Contest sponsored by the Aircraft Division's Recreation Club.

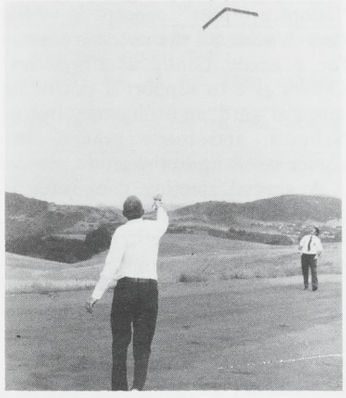
Taking a prominent part in the day's events was Ventura's Robert Provart who took first place in the Free Flight "towline glider" event.

It was the second time Provart has won a first place in the contest, the first time being three years ago. A year later he captured a sixth and this year again carried off top class honors.

Provart explained the Flying Wing gliders are towed aloft like a kite and then released. The towline length is limited to 50 meters. The winner is the one which stays aloft the longest — based upon the best two out of four flight attempts.

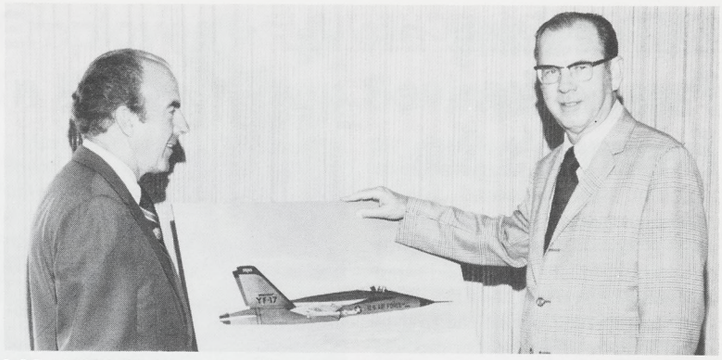
Unfavorable weather conditions of fog and heavy air, created flying difficulties for all contestants this year.

Provart waited until the last half-hour of the contest when weather conditions improved before he took his final two — and as it turned out — winning flights. There were 10 entered in his class. The event attracted some 50 Flying Wing enthusiasts.



UP AND AWAY goes Robert Provart's winning Flying Wing glider during test flight on model airplane strip.

FINAL ADJUSTMENTS on his Flying Wing glider are made by Ventura's Robert Provart just prior to the launching.



LOS ANGELES County Supervisor Kenneth Hahn receives portrait of Northrop's YF-17 prototype from Jack Mannion, left, vice president, Administration, during visit to the Aircraft Division. Supervisor Hahn was given an update on Northrop's Energy Conservation program by members of the Energy Task Force and a tour of the assembly line.

NRTC's Srour, Curtis, Chiu Earn IEEE Outstanding Paper Award

A paper entitled "Charge Transport Studies in SiO_2: Processing Effects and Implications for Radiation Hardening" was presented by three authors with the Solid State Electronics Laboratory at the Northrop Research and Technology Center.

J. R. Srour, O. L. Curtis Jr., and K. Y. Chiu, earned the Outstanding Paper Award for the 1974 Institute of Electrical and Electronics Engineers (IEEE) Annual Conference on Nuclear and Space Radiation Effects, held at the Colorado State University. The paper described the experiments in which an electron-beam injection technique was used to study charge transport in silicon dioxide films.

Srour joined Northrop Research and Technology Center in 1968 after receiving B.E.E., M.E.E. and Ph.D. degrees from Catholic University.

Curtis is an old-timer in the field of radiation effects, having published his first paper on the effects of irradiation on recombination in germanium in 1957. He obtained his M.S. in physics at Purdue University in 1956 and then went to Oak Ridge National Laboratory.

Chiu received B.S. and M.S. degrees in electrical engineering from Cheng Kung and Chiao Tung Universities, Taiwan. In 1972, he received his M.S. in materials science from the University of Southern California, where he is a Ph.D. candidate.

Youngsters Find There Really Is A Great Pumpkin

Linus is right!

Despite what you may have read in a certain comic strip, there really *is* a Great Pumpkin.

A group of four and five-year-olds from Benjamin Franklin Elementary School found this out when they recently visited the Electro-Mechanical Division's Horticulture Club pumpkin patch.

The club "farms" surplus company land adjoining the Riverside Freeway both for recreation and as an environmental improvement. In addition to individual garden plots, they also have 2000 seedling pines growing.

Mrs. Jackie Higgins, preschool teacher at the Anaheim school, saw the pumpkins from the freeway and asked if she could bring her preschool group to see how a genuine Hallow'een pumpkin grows.

Betty Schulz, president of the NRC Horticulture Club, conducted the tour. She showed them how the pumpkin grows from a blossom. Then to climax the visit, she pulled the biggest pumpkin in the field and with their help turned it into a jack-o-lantern.

At the conclusion of the visit, the jack-o-lantern was given to the children to take back and display in their classroom.

They all agreed there really *is* a Great Pumpkin and their homegrown jack-o-lantern is *it*.

The children's visit was arranged by Bob Boostrom, Employee Relations, and Duane Baptiste, Personnel Activities. The pumpkin patch was grown by Art Boston, Maintenance superintendent.

BETTY SCHULZ, left, president of the Electro-Mechanical Division Horticulture Club shows Anaheim preschool class how to turn a pumpkin into a jack-o-lantern. Center, Pedro Arcinaga, who posed for the pumpkin's smile, compares grins with the jack-o-lantern. Right, the happy four-year-olds carry their Great Pumpkin.

EMT Training Pays Off for Employee's Son

Chuck Lohrstorfer, 23-year-old son of Bob Lohrstorfer, senior design engineer, Electrical and Instruments Systems, Aircraft Division, has become one of the first to be certified as an emergency medical technician (EMT) at Hoag Memorial Hospital Presbyterian, Newport Beach. This is the first level of training for those who wish to become paramedics.

Chuck, along with three of his fellow orderlies, are the first hospital personnel in Orange County to receive this certification.

Chuck's training resulted in an unusual first application during the summer. While driving through Iowa on vacation, he came across an accident. A vehicle was turned upside down and the male and female occupants were trapped inside and seriously injured.

Chuck Lohrstorfer

Chuck, with the assistance of bystanders, righted the vehicle and removed the injured.

Multiple Injuries

"The young man had multiple injuries — a broken leg, collar bone, and arm, as well as a smashed nose, several teeth missing, and appeared to be drowning in his own blood."

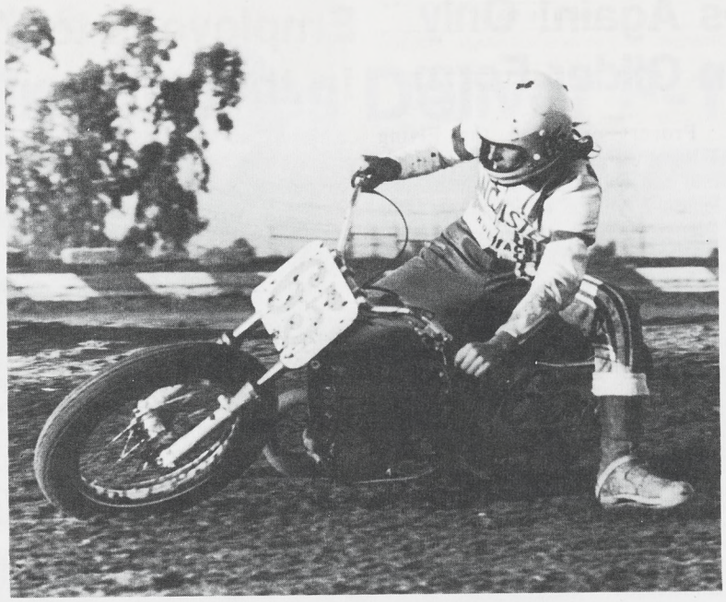
Chuck, utilizing an emergency kit he carries in his car, set about restoring normal breathing for the man by clearing his air passage and inserting an airway device. He then splinted the fractures and compressed the bleeding areas.

The woman was pale and appeared to be in shock. She too had a broken arm and was bleeding profusely. Chuck treated her in the same manner.

Waiting

The police did not arrive at the scene for approximately an hour and an ambulance followed 10 minutes later. Chuck was asked to accompany the injured on the ride to the hospital 37 miles away, and while doing so, maintained vigil on the couple taking vital signs and giving oxygen.

Chuck's efforts and the value of the training he is undertaking were enhanced in August with the receipt of a letter of gratitude from the chief of police of the Iowa State Highway Patrol.



GARY BEVANS OF Northrop Palmdale has been winning motorcycle races since age 10 and was recognized as the youngest aspirant in the United States, took on the big boys recently, only to run out of gas after being within 20 seconds of the checkered flag. Photo courtesy of Dan Mahony Photography.

Motorcycle Racer Piles Up Impressive Array of Prizes

For more than nine years, Gary Bevans has carted home an increasing array of trophies, ribbons, cups and other forms of recognition bestowed upon top-flight motorcycle racers.

And that's not bad for a young man a few months shy of his 19th birthday.

Gary is an electrical installer at Northrop Palmdale. His brother, Don, and mother, Aline Soldani, are also Northrop employees at Palmdale.

Gary hopped on his first motored cycle (a mini-bike) when he was five. In a few short months, and after many bruises and spills, he mastered it and went on to a full-sized bike. By the age of 10, he was winning racing events and received recognition as the youngest aspirant in the United States.

Racing for the Bevans family meant weekends on the road to Ascot, San Jose, El Centro, Corona, Perris and other points.

Early this year, before Gary completed high school and joined Northrop, he took on his most ambitious quest. He traveled to Daytona Beach, Fla., and the Daytona Beach Nationals, his second venture on a roadway course against the top riders in the nation.

Following a day-before crash and an all-night repair session, Gary blazed from a 38th position start to fifth place before the second lap of a five-lap qualifying race. He passed the leader on the final round, was within 20 seconds of the checkered flag when he ran out of gas!

Push as he would, Gary could not top the oncoming pack who passed him at 150 miles-per-hour. The winner of that heat went on to place second in the main event.

While Gary works most weekends at Northrop, he still finds time to race and looks forward to more competition on the national level.

"I enjoy racing, so I enter whatever races I can and when time permits," Gary says.

Registration Urged by Selective Service

Since the President and the Congress have discontinued inductions into the armed forces under the Military Selective Service Act, many young men are under the false impression that the requirement to register with Selective Service has been eliminated, according to Carlos C. Ogden, California director of Selective Service.

Those who may have inadvertently failed to register in compliance with the law should do so immediately, says Ogden, to assure the availability of an inventory of manpower in the event of an emergency.

Call any Selective Service office for your nearest location to register or for further information.

Annual Christmas Gift Program Is Well Underway

The Christmas Gift Program, a tradition as old as Northrop itself and based on the simple fact that Northrop employees care enough to share with the less fortunate at Christmas, got underway at the Aircraft and Electronics divisions and the corporate offices, and will gain momentum as the annual yearend holiday approaches.

The program is strictly voluntary, only for those who wish to take part. It provides a means for each individual to give or help as he or she sees fit. It is as diversifed as the departments, functions and offices taking part.

Some groups elect to follow the "adopt a family" concept in which they provide all the necessary items for a needy family at Christmas. Others give to support a charity, a hospital ward, an orphanage, Indian Schools, and many others. The choice is left up to the group.

A special steering committee is appointed to help. This group handles the responsibility of coordinating the total program.

The committee for 1974 at the Aircraft Division consists of Pat Anderson, Maybelle Blair, Rudy Charles, Sandy Cox, Mildred Davis, Scott Egan, Bill Hayman, Guy Kirby, Polly Middleton, Ivy Pocock, Doris Robinson, Sam Vernola, Pat Andren and Vito Ripa. For the corporate offices, Rhonda Allen. Marie Tully is steering committee chairman and coordinates the total program.

Electronics Division personnel wishing to participate in the Christmas Gift Program should contact Dell Wyatt, Hawthorne ext. 429.

WHITE-BEARDED GNUS can be seen grazing at the San Diego Wild Animal Park from the Wgasa Bush Line. Dec. 21 through Jan. 1 have been declared Northrop Days at the San Diego Zoo and Wild Animal Park. See Personnel Activities for the special savings package.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Ford, 1972 Torino, 4-dr. sdn., 8 cyl., a/c, p/s, a/t, 35,288 mi., min. bid, $2000; Pinto, 1972 2-dr. sdn., 4 cyl., 4-spd., 75,000 mi., Hawthorne Credit Union ext. 1117.

Motorcycles, 2 Honda Trail 70, $275 ea. 213-375-7265.

Motorcycle, 1974 125 Yamaha, dirt-type, $500. 213-774-6638.

Motorcycle, 1973 Honda CB350 K4, parcel rack, $850. 714-956-0464.

Motorcycle, 1973 Honda CL125, 1400 mi., $350. 714-897-9974.

Ford, 1961 2-dr. h/top, 80,000 act. mi., $550. 213-675-7740.

Mustang, 1968 convt., V-8, auto., p/s, 54,000 mi., $1000. 213-326-7513.

Truck, 1974 Datsun, w/camper, $3400. 213-327-8888.

Motorcycle, 1974 Suzuki TM 125, ridden 3 times, incl. stand, $595. 213-274-0589.

Datsun, 1971, 4-dr., stk. shift, $1395. 213-542-2678.

Maverick, 1970, 120 h.p. eng., std. trans., Michelin radial tires, $1450. 213-887-1947.

Motorcycle, 1970 Harley Davidson Sportster, $1800. 213-375-7303.

Chevrolet, 1957 pickup, ½-ton, 6 cyl., new tires, $300. 213-671-1541.

Motorcycle, 1972 CB 350 Honda, 5000 mi., $650. 213-644-6043.

Chevrolet, 1964 Impala, 2 dr. h/top, a/c, new smog device, radio, $500. 213-328-9030.

Mercury station wagon, V-8, p/s, p/b, $295. 213-677-3788.

Ford, 1968, 2-dr. h/top, p/s, pwr. d/bks., AM-FM stereo, $1195. 213-292-7663.

Truck, Chevrolet 1965 ¾-ton, V-8, 283, w/1971 8′ cabover camper, Weekender, sleeps 6, $2250. 714-524-9688.

Motorcycle, 1973 Honda 100 cc, 350 mi., won on TV show, $350. 213-365-7338.

Gran Torina, 1973, 4-dr. h/top, p/s, air, $2900. 213-865-8319.

Motorcycles, 1971 Suzuki TM-400, lowered by K&N, Curnutt shocks, $450; 1969 Sacks w/72 DKW 6-spd. eng., $350. 714-524-6163.

Motorcycles, 1972 Suzuki 100, many extras, $300; 1971 Honda SL70, str. legal, $250. 213-830-4265.

Motorcycles, 1971 Suzuki, 50 cc, 1300 mi., $190; Honda, 1973 CT70, 650 mi., $325. 213-348-9928.

Pickup, 1973 Chevrolet, ¾-ton, 8½′ Four Star cabover camper, $4800. 714-897-6046.

Pickup, 1969 Ford, ¾-ton, auto., 360 cu. in., new tires, batt., rad., uphol. & exhaust sys., $1280. 213-378-1026.

Camaro, 1967, $900. 213-645-5322.

Volkswagen, 1966 van, new tires, $700. 213-672-2881.

Dodge, 1966 ¾-ton 4x4 pwr. wagon, 1200x16.5 tires, 18,000-lb. winch, camper shell, needs trans. work, $1500. 213-996-0792.

Corvette, 1964 Fastback, $2600. 805-498-6848.

Camaro, 1972 V-8, air, auto., p/s, dual ex., AM-FM, $2800. 213-699-7681.

Volvo, 1972 4-spd. trans., AM-FM radio, air, mags, $2700. 714-778-4517.

Motorhome, 1972 Landau, 25′, gen., a/c, dual holding & gas tanks, 20′ awning & side curtains, $13,950. 714-588-0967.

Ford, 1972 Ranchero-GT, V-8, full pwr., air, r/h, auto., 20,000 mi., $3000. 213-869-4885.

Pontiac, 1969 Custom Tempest, air, 350 eng., 2-dr., $1495. 213-834-0944.

Camaro SS-396, 1968, 1000 mi. on reblt. eng., a/c, 4-spd. trans., p/s, p/disc bks., 4-11 posi., $1400. 213-322-7625.

Pickup, Datsun, extras, 1972, $2300. 213-376-5455.

Vechicles For Sale

Motorcycle, 1973 Honda SL90 Trail-type, 1400 mi., many extras, $275. 213-325-8267.

Pickup, 1969 Ford camper, ¾-ton, Ranger pkg., p/s, p/b, fac. air, auto. trans., Cabotel 8′ shell, 40,010 mi., $2695. 213-671-0835.

Pinto, 1972 Runabout, 32,000 mi., 2000 cc eng., 4-spd., $400 dn., $62.75 mo. pymts., $1300 bal. 213-676-6313.

Mustang, 1965, 6-cyl., 200 eng., a/t, r/h, $550. 213-377-5853.

Chrysler, 1967 station wagon, $650. 213-676-5921.

Chevrolet, 1963 Super Sport Impala, r/h, a/c, console, $475. 213-370-3482.

Miscellaneous For Sale

Typewriter, portable, Alpina w/carrying case, $35; refrigerator, Cold Spot, frostless, 15 cu. ft., stainless steel drs., $50. 213-326-5979.

Camper Shell, Vacationer, short bed, $100. 213-671-8890.

Dining Table, cherry wood, 2 captain chairs, 4 others, buffet, $125; washing machine, Hoover portable, white, $25; TV, Admiral, b&w, stereo, maple cabinet, $100. 213-324-2021.

Camera w/projector & screen, complete outfit, Bell & Howell Super 8, $125; vacuum, Hoover canister, $25. 213-323-3924.

Trailer, 15′ Aljo, $550. 213-532-2142.

Skis, Fisher Superglass, 185 cm, $75; ski boots, women's, Humanic buckle, size 7-8, $29. 213-329-9510.

Sofa, 8′, Loveseat, 5′, Med. style, blue & green floral print, $200; hanging lamp, gold, wrought iron, $25. 213-370-7861.

Television Camera, closed circuit, $100. 213-329-4090.

Juke Box, Kenner, extra drums, $12. 213-530-3521.

Combo Speaker, Leslie, amp. model 825, 9 mos. old, used twice, pre-amp control incl., $500. 213-679-5884.

Typewriters, 2 Smith Corona portables, $25 & $45; bicycle, man's 2-spd. Schwinn, $35. 213-377-8753.

Baby Carriage, lge., makes into car bed or use as a bassinet, $20. 213-679-0517.

Hitch for VW, complete, $10. 213-325-0353.

Auto Seats, swivel, black vinyl, folding back, $35; speed equipment, Slant 6, Offy 4-bbl. intake manifold w/Carter C a.f.b. carb., Webber 7 Grand cam, $65. 714-894-2337.

Movie Light Bar, complete w/4 375 w. bulbs, exposure guide, $12.50. 213-645-1489.

Tape Recorder, G.E. port. reel-to-reel, bltin. stereo amps, detach. spkrs., mikes, reels, tape, rarely used, $50. 213-429-3937.

Table Saw, Sears, 10″, ext. table & wheeled stand, $120. 213-545-5960.

Bassinet, w/pad, lavender lace, $25. 213-327-3818.

Desert Air Lamps, $30; styling chairs, 3 plastic-chrome, $25. 213-675-6020.

Luggage, Samsonite, 5 pcs., rust colored, $25. or sell separately. 213-831-1745.

Clarinet, Dumont Ebony, b flat, $90; cello, ¾-size German made, $175; tires, used, 7.50x16, 8-ply nylon, $10 ea. 213-377-3806.

Camera, Honeywell, dble. Super 8 w/both 100′ dble. 8 & 50′ cart. magazines, f 1.8 2-spd. zoom, w/auto/man. exp. control, leather case, $400. 213-376-9958.

Coffee Table, 40″ round, maple, $10. 213-376-4831.

Rifle, mod. 70-A Winchester 30-06 Springfield, factory new, 4x-32mm scope, $212. 714-774-3340.

Desk, lge., mahogany 7-drwr., $50. 213-378-3017.

Typewriter, portable Remington, $15. 213-675-7316.

Camera, Nikon f2, 1.4 lens, case, $475. 213-973-8218.

Guitar, bass & amp., Vox Kensington, $175. 213-542-6436.

Refrigerator, General Electric, $25. 213-973-4452.

Game Set, octagonal, walnut, 4 black leather chairs, $550. or w/linen tablecloth & 8 napkins, $250. 714-894-5769.

Ford Model T-10, ½-scale, w/3-h.p., 4-cycle Briggs & Stratton eng., pneumatic tires on wood-spoke whls., $150. 213-454-6995.

Vacuum, Eureka upright, $35; electric car, child's, rechargeable, $15; crib, walnut, Childcraft, $60. 213-676-3050.

Employees to Vote Shares Held In the Northrop Savings Plans

More than 10,000 Northrop employees who are participants in the company's Savings Plans will now be able to instruct the independent trustee as to the voting of the Northrop shares held for them in the savings program.

As a result of action taken by the company's board of directors at its regular meeting in September, each employee participating in the Savings Plans will be provided information about the company in the same manner as any record shareholder, including a proxy statement and a card that will permit the employee-participant to express preferences on matters to be voted upon at the company's annual meeting.

All shares in the Savings Plans are held by an outside independent trustee, Manufacturers Hanover Trust Company of New York. In the past, the trustee has voted all shares held in the Savings Plans at its discretion.

In the near future, employee Savings Plans participants will receive a copy of the company's 1973 Annual Report together with a letter explaining in detail the arrangements made for voting the shares held for them in the savings program.

Later, concurrent with the mailing of the proxy statement to outside shareholders, employee-participants in the Savings Plans will also receive a copy of the proxy statement, a card showing the number of shares beneficially held and a return envelope for mailing to Manufacturers Hanover. The trustee will tabulate the results and is prohibited from disclosing the preferences expressed by any employee. Obviously, it is in the best interests of the Savings Plans members as well as the company that all participants express their voting preferences. The trustee will vote the shares held in trust — presently more than 900,000 — as instructed by the employee participants.

This change in the plans as voted by the board of directors is in keeping with current practices of a number of U.S. corporations regarding the voting of shares held in a company savings program.

The Northrop Savings Plans provides for a payment by the company into each employee's account of an amount equal to 50 per cent of the employee's own contribution.

Miscellaneous For Sale

Boat, 18½′ 1973 Nordig, 455 Olds-Jet, boat cover, tandem trailer, 2 18 gal. fuel tanks, auto. pump, $4300. 213-892-1618.

Stereo Recorder/Player, Bradford 8-track, $100. 213-673-4890.

Golf Clubs, 4 woods, 9 irons, putter, kangaroo bag & head covers, $150; area rug, 9x12 nylon gold shag w/fringe, $60. 213-541-1913.

Organ, elect., Vox Jaguar, $150. 213-833-5515.

TV, RCA 25″ color, walnut cabinet, $125. 213-649-5348.

Ironer, Deluxe Kenmore, console, $35; dishwasher, port. Kenmore top-load, white, butcher block top, auto., used 1½ yrs., $85. 213-645-7891.

Sewing Machine, portable, w/attachs., Electo-Grand, $50. 213-328-1054.

Horse, Palomino mare, 6 yrs. old, sound, $500. 213-328-3182.

Accordion, full size, 120 bass, $65. 213-329-2893.

Lavatory Sink & toilet, used, $25. 213-379-4517.

Pups, boxer, AKC champ. sired, fawn male, $150; dk. brindle male, $125. 714-833-2448.

Television, small b&w RCA, $45; backpack, Camptrails w/alum. frame, never used, 1974 mod., waterproof, $40. 213-372-4113.

Wanted To Buy

Military Souvenirs, German & Japanese WWII, hats, uniforms, flags, badges. 213-375-4312.

Ski Equipment for beginner, skis 160 cm, w/bindings, boots, size 6 or 7 & poles. 714-821-8651.

Records, rhythm & blues vocal group from 1950-1959, all speeds. 213-924-2563.

Utility Trailer, reasonable. 213-371-7274.

Exercise Bicycle, inexpensive. 213-329-6728.

Bedroom Set, white French provincial w/canopy bed, will pay reasonable price for complete or incomplete set. 213-370-8612.

Table, Duncan Phyfe, & 6 matching chairs, any condition; furniture, near new, antique white & gold preferred. 213-679-6982.

For Sale or Trade

Dryer, gas, trade for dryer, elec. 213-860-8746.

Rentals Wanted

House, 1 or 2-bdrm., or apt., unfurn., in Lawndale or El Segundo area. 213-973-1732.

Cabin at Big Bear or Running Springs for 12/28/74 — 1/1/75. Must accommodate 12, 2 baths. 213-378-2790.

Free

Doves, 5, white, male & female, require lge. cage. 213-675-5920.

Kittens, 3, 8 wks. old. 213-371-8629.

Rabbit, brown & white female. 213-545-3509.

Ride Wanted, Offered

Trask & Fairview, Santa Ana, 8 a.m.-4:42 p.m., Aircraft Div. ext. 2754, 714-558-7485.

Personals

To all of Susie's Northrop friends, we wish to express our thanks for everything. Your kind expressions of sympathy are gratefully acknowledged & deeply appreciated. THE FAMILY OF SUE LOOFBOURROW.

Many thanks to all my friends for the luncheon & gift upon my retirement. Thanks too, for all your help on the job. Thirty-three years with all of you was a pleasant time. JIM LARSON.

We would like to extend our sincere & heartfelt appreciation to all the employees at Electro-Mechanical Division for the many cards, flowers & especially prayers offered in sympathy for the recent loss of Joseph F. Wilson. THE WILSON FAMILY.

Our thanks to everyone for the flowers, the many nice cards & all the other nice things you did, on the death of our son. LUCILLE & BERT ANCTIL.

I wish to thank the Northrop Recreation Club & all my friends for their kindness during my recent illness. WILMONT BAKER.

Anyone witnessing hit & run of yellow VW Karmann Ghia by a red car, parked by railroad tracks 10-21-74, please contact Aircraft Div. ext. 1715, 213-645-1811. Reward.

Clothing wanted, all kinds for boys ages 12 - 17. Also all kinds of bedding & boy's bedroom furnishings. 213-329-7998.

Sincere appreciation to all the friends of my late husband, Charles I. Adamovic, for their many expressions of sympathy on his passing. MARGARET ADAMOVIC & FAMILY

Dental Plan Changes Prompt Questions From Employees

As a result of the recent changes in the dental insurance coverage, the following questions have been asked to which we have provided the answers shown below in an effort to clarify the concerns of many individuals:

Q. Will I have to pay the 93 cents per week for the dependent dental insurance coverage?

A. No — not after Nov. 1, 1974.

Q. Does the elimination of the 93 cents per week for dependent dental coverage apply to both plans?

A. Yes — was effective Nov. 1, 1974. This was reflected in the paycheck received Nov. 15, 1974 for those who have elected this coverage.

Q. Have there been any changes in Plan II, Kodosh Dental Center?

A. No, other than the elimination of the 93 cent cost for dependent coverage as of Nov. 1, 1974.

Q. What changes have been made in Plan I, Crown Life Insurance, (you select your own dentist)?

A. In addition to the elimination of the 93 cent cost for dependent coverage as of Nov. 1, 1974, the deductible of $25 has been eliminated effective the same date. However, the Schedule of Benefits will remain the same. The following is an example of the payment of a claim before and after Nov. 1, 1974:

	Before Nov. 1, 1974		After Nov. 1, 1974	
	Charge	Insurance Pays	Charge	Insurance Pays
Cleaning	$15.00	$10.80	$15.00	$10.80
Bite Wing X-ray-2 Films	10.00	(6.00)	10.00	6.00
Filling	12.00	(9.60)	12.00	9.60
	$37.00	$10.80 Payable ($15.60 Applied to $25 Deductible) You pay $26.20 Insurance pays $10.80	$37.00	$26.40 You pay $10.60 Insurance pays $26.40

Q. Does Plan I, Crown Life Insurance (own dentist), now pay 100 per cent of charges incurred?

A. No — benefits paid are in accordance with the schedule published in your booklet/certificate.

Q. Do I have to add my dependents to the dental insurance if I do not have them covered now?

A. Yes — enrollment for dependents can be made now. Enrollment will close Jan. 1, 1975.

Q. If I already have my dependents enrolled, was the deduction of 93 cents automatically dropped as of Nov. 1, 1974 without my having to complete a new enrollment card?

A. Yes.

Q. Can I change plans, as well as add my dependents now?

A. Yes. All enrollment cards received prior to Nov. 1, 1974 that involve a plan change and/or addition of dependents became effective Nov. 1, 1974. Enrollment cards for plan changes and/or addition of dependents received after Nov. 1, 1974, will be effective the Monday following the date received by the insurance office up to Jan. 1, 1975, at which time enrollment will close.

Q. Can I make changes any time of the year and as many times as I choose?

A. No — the usual Open Enrollment period is from Nov. 15 through Dec. 15, effective Jan. 1 of the following year.

Q. What form do I use to change my dental plan?

A. The Dental Plan Enrollment Record Card. If you elect coverage provided by the Kodosh Dental Center, you must also fill out two location cards.

Q. Where do I get these cards?

A. From your department clerk or the Group Insurance office.

Q. Can the employee have one dental plan and the family have another?

A. No — the whole family is included under one plan; plans cannot be split.

Q. Where do I write my dependent's name on the Dental Enrollment card?

A. You don't, just check Box #3 under dependent coverage for the whole family, and write in the number of eligible unmarried children in section provided for this, as well as check the appropriate marital status block.

LUCILLE RILEY, left, and Sophie Adams, electronic assemblers, Hawthorne, display handcrafted items that brought them awards at the Los Angeles County Fair recently. Lucille took a blue ribbon for her knitted sweater and a third-place ribbon for a crocheted shawl entered in the Home Arts Competition. Sophie won a third-place ribbon for her ceramic vase made completely by hand without the use of a wheel. The ladies competed with 8000 exhibitors.

Annual NRC Children's Christmas Party to be Held at Leuzinger High

The 34th annual NRC Children's Christmas Party will be held Sunday, Dec. 15, at the Leuzinger High School Auditorium, Lawndale, according to Frank McGinley, NRC president.

"This is the highlight of our entire year," McGinley said. "It is one of the few solid traditions we have been able to keep through the years and certainly brings the most joy to everyone involved in its planning."

McGinley also noted that the selection of a more localized auditorium to the main facility should serve to enhance the party which will feature clowns, presents for all children 12 years and younger, entertainment, and of course, Santa Claus.

Admission and parking will be free and showtime will be 12:30. Ticket reservation forms will be distributed to all division employees Nov. 22 and must be returned no later than Monday, Dec. 2.

Management Seminars Set

Electronics Division Organization Development and Compensation, has scheduled advanced management seminars for division management personnel who have completed the "Principles of Management" course or an equivalent fundamental management course.

The sessions will be held in the executive conference room at the Hawthorne facility on Mondays from 5 to 7:30 p.m. beginning Jan. 13.

The course utilizes the Peter Drucker "Effective Executive" book, film series and covers such subjects as: Managing Your Time, Staffing for Strength, Optimizing Individual Contributions, Establishing Priorities, and Effective Decision-making.

Jud Morris will be the instructor. The text will be provided free of charge for those who successfully complete the entire course. If you wish to enroll in this program, contact Organization Development and Compensation, Hawthorne ext. 426, no later than Nov. 30.

Thirteen to Qualify For 20, 10, 5-Year Service Awards

Thirteen Electronics Division employees will qualify for service awards for 20, 10 and 5 years this month.

Twenty-year service awards — James P. Rigney, Hawthorne and Mary J. Cooper, Palos Verdes.

Ten-year service — Isidora Sanchez, El Monte facility; Agnes J. Bennett, Francis X. Merlino, Robert E. Peterson, Lee G. Seaman, and Ed D. Bardon, Hawthorne. Edmond J. Canavan and Doris E. DiGirolamo, Palos Verdes.

Five-year service — Joanette E. Lewis and Harold E. Beadle Hawthorne. Charles A. Boynton, Berkeley Scientific Labs.

Merry Christmas

and best wishes for the New Year

NORTHROP NEWS

Season's Greetings

To the Men and Women of Northrop:

Traditionally, at this time of year, we pause to count our blessings, to express our appreciation to our friends and colleagues, and to look ahead to the coming year with renewed hope and confidence.

The year that is ending has been among the best in our history, a proud record of achievement which belongs to each and every one of you. As you celebrate this holiday season, I hope you will take well-deserved satisfaction from these accomplishments, which your loyalty, dedication and hard work have made possible.

Northrop's performance during the last year should inspire us to look forward with confidence and enthusiasm to 1975 and the opportunities the new year brings to our company and to all of us.

Best wishes for a joyous Holiday Season — and a Happy New Year.

Thomas V. Jones
Chairman and President

To Electronics Division Personnel:

Once again the upcoming holidays offer each of us the opportunity to reflect on the accomplishments of the past year and consider our goals and commitments for the future.

To me, the spirit of the season brings with it a never-changing atmosphere of fellowship, good cheer and above all, an optimistic outlook for true peace on earth for all mankind. Our personal situations, the business environment and the posture of our company continually change from year to year — but the festivity and happiness of the holidays do not change, and for that welcome respite we should all be grateful.

With that thought in mind, I thank each of you for your contributions to Northrop Electronics in 1974, and look forward to your continued support and participation in the years to come. Have a truly joyful holiday season and the happiest of New Years!

David N. Ferguson
General Manager

OV-1D MOHAWK flying over Southern California coastline towards San Diego transmits imagery from side looking radar (SLAR) using Northrop data link system (AIDATS). Bill Brake, manager, Flight Support Operations, Aircraft Division, flew demonstration flights accompanied by Al Garreffa, airborne equipment engineer.

AIDATS Test for Army Held at Palos Verdes

A highly important contractor demonstration of the Tactical Avionics Department's Army Inflight Data Transmission System (AIDATS) was held on the Palos Verdes Peninsula Dec. 10 and 11 with results termed as "very successful."

A. B. Lipscomb, vice president and manager, Avionics Department, described the results of the demonstration which was witnessed by some 40 high-ranking officers and civilians. Avionics has been modifying and testing AIDATS under contract to the Army Electronics Command (ECOM).

"The flight test demonstration of our AIDATS data link system transmitted reconnaissance imagery from the OV-1 aircraft's side looking radar (SLAR) with high technical clarity," Lipscomb said. "It was a continuation of our successful test program following modification of AIDATS for the customer."

According to Lipscomb, the demonstration was also intended to show growth capabilities of the system, and to present engineering development costs and schedules to key personnel.

The demonstration was conducted at the Crest Road Nike Site atop the Palos Verdes Peninsula where the antenna was mounted, a control room set up, and one of the buildings used as a demonstration room and lounge.

The OV-1D Mohawk aircraft, based at Hawthorne Airport, was manned by an all-Northrop crew and flew a pattern which took it down the coast past the peninsula and south as far as San Diego.

While the OV-1 aircraft flew southbound over the ocean, its side looking radar scanned the coast as far inland as the freeways. Northrop's data link system transmitted a digitally encoded signal via the ground antenna to a processor-viewer (film reconstitution device) in the control room. The result was hard-copy film with high quality imagery reconstituted within seconds.

The film was viewed by observers in the control room as it came through the processor, and was also seen via remote video in the observation room.

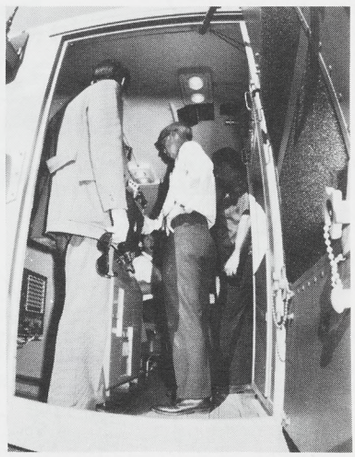
Capability Demonstration

Northrop's data link system demonstrated its capability of long range, line of sight, high fidelity transmission onto hard-copy film in near-real time, according to Art Gandy, AIDATS program manager. For the battlefield commander, forest fire fighter, or hurricane watcher the system produces much higher resolution film imagery than television. It has a significant near-real time advantage over the shooting of conventional reconnaissance, with the delay in the aircraft returning and the film being processed.

According to Gandy, modification and testing of the improved AIDATS system (it was originally called JIFDATS when it was under a joint service contract) has progressed on schedule and with a high degree of technical success.

With the assistance of George Kelly, Marketing representative, invited officials viewed the demonstration in a special visitor

(See AIDATS, page 3)



PREPARING for demonstration in central control room are from left, Burlie Cole, supervisor, System Engineering; Art Gandy, AIDATS program manager, seated; Chet Wetzel and Bill MacCorkell, ground station engineers.

Ski Club Plans January Outings

Preparations for upcoming outings will be discussed at the NRC Ski Club meeting Thursday, Dec. 19, at 8 p.m. at Lococo's Restaurant, Manhattan Beach, according to Terry Dickson, commissioner.

"We have two real good weekend package deals planned in January. The first being the weekend of Jan. 10 to Mammoth Mountain and the second will be the weekend of Jan. 25 to June Mountain," Dickson said.

For further information contact Dickson on ext. 242, Hawthorne, or Gayle Stromberg on ext. 1955 at the Aircraft Division.

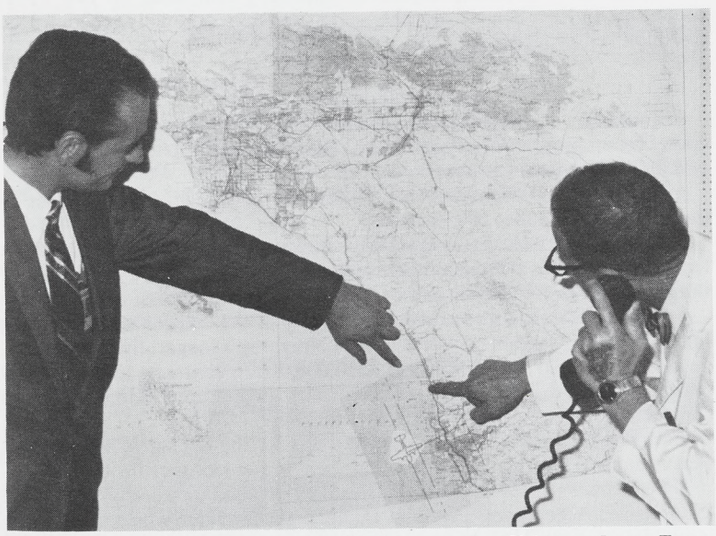
BSL NORTHROP'S mobile demonstration vans allow medical groups and furniture manufacturers to view the firm's business data systems on site rather than at the company's facility in Torrance. One van will serve potential customers in the Western U.S. with a second van operating out of BSL's Hickory, North Carolina, office.

AIDATS — Very Successful Test

(Continued from page 2)

observation room. Four flights were planned over a two-day period.

AIDATS program personnel contributing to the success of the demonstration were: Bob Cooper, project engineer; Burlie Cole, supervisor, System Engineering; Chet Wetzel, Chuck Fuller, Bill MacCorkell and Sam Lalande, ground station engineers; Al Garreffa, Don Schultz, Cliff Ross and Walt Davison, airborne equipment engineers.



FOLLOWING PROGRESS of AIDATS demonstration flight are Larry Toops, engineering specialist, left, and Joe Hamer, intelligence systems analyst, Palos Verdes. Aircraft marker was moved down Southern California coastline to show exact position of plane while imagery was being transmitted during flight.

Tennis Tourney Draws Many Entrants

A men's and women's singles tennis tournament was held during September and October with over 50 entrants from the Electronics and Aircraft NRC Tennis Clubs participating, according to Maxine Lewis, commissioner. Three matches were won by Aircraft Division players with the sixth match to be decided in January.

The winners were: Women's Singles — Phyllis Kates, Aircraft; Open Men's Singles — Bob Reese, Aircraft; C Men's Singles — Steve Kaneshiro, Electronics; D Men's Singles — Mel Cook, Aircraft; and D Men's Singles (Consolation) — Tom Vicelja, Electronics. Yet to be decided is the C Men's Singles Consolation title.

Belgian Air Force Selects Airborne Omega Systems

The Electronics Division has been awarded a $970,000 contract by the Belgian Air Force to equip its C-130 Hercules transports with airborne Omega long-range navigation systems.

The Belgian selection marks the first application of the Omega global navigation system outside the U.S. in the widely used C-130, according to J. B. Meagher, manager, Avionics Marketing.

"The selection by the Belgian Air Force came after an extensive flight test program," Meagher said. "Northrop's ARN/99 again proved in world competition that our system is superior in design, performance and cost."

Northrop Omega automatic systems are also used on USAF airborne weather reconnaissance (AWRS) and airborne warning and control systems (AWACS) aircraft, on Marine Corps C-130s and CH-46 assault helicopters, and on U.S. Navy C9-B aircraft, surface ships and attack submarines. The Argentine and French navies use Electronics Division Omega systems on ships and submarines.

The Avionics Department builds the Omega receiver/computer at its Hawthorne facility.

Ross Rogers Heads Service Award Roster for December

Electronics Division employees will receive service awards this month with Ross Rogers, chief, Manufacturing group, Hawthorne, heading the roster as he observes his 30th service anniversary on Dec. 27.

Ross Rogers

"I had applied for work at the original Hawthorne facility right before Christmas," he recalled, "and I'll be darned if right after they said I had been accepted, if they didn't give me a week's pay and say start off the Christmas break. I knew then that Northrop must be a good place to work."

Starting out as an experimental mechanic on the B-35 Flying Wing program, Rogers remained in experimental prototyping through the Flying Wing programs, F-89, T-38, and N-156 programs, before transferring to the newly formed Nortronics Department in 1957.

Other recipients of service awards during December are: 25 years — James Schuessler, Palos Verdes; 20 years — Harold Bertelsen, Warehouse Facility; 15 years — Meril Johnson, Eastern Regional office, and Laura Lowther, Hawthorne.

Quiz Program Winners

Two young ladies in the Avionics Department at Hawthorne were big winners recently on network quiz programs. **Mary Ann Ray,** secretary, Manufacturing group, won a spanking new 1975 Chevy Nova on CBS' The Price is Right, aired on Dec. 19. Earlier, **Marcella Branch,** photo assistant, won a 1975 Buick Skylark on Let's Make a Deal.

Rick Davis Earns Silver 'Dolphins'

Rick Davis, STS2, U.S. Navy, was recently awarded silver "Dolphins", the coveted symbol of the Submarine Service, by his commanding officer of the submarine, the U.S.S. Kamehameha.

He is the son of C. H. Davis, engineering specialist, Advance Systems Department, Electronics Division at Palos Verdes.

In a letter to his parents notifying them of the award, the commanding officer stated, "The designation 'Qualified in Submarines' is the culmination of a great deal of hard work and self-sacrifice. It represents the achievement of professional proficiency and personal integrity unparalleled elsewhere in our society."

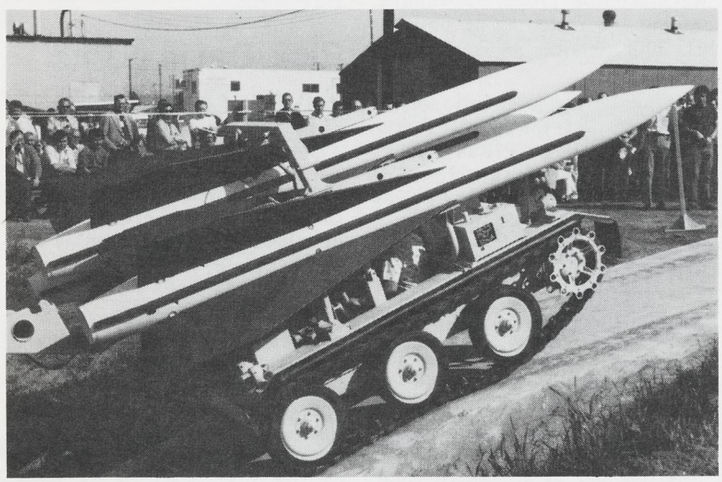
Rick has just completed his second patrol aboard the U.S.S. Kamehameha.

RICK DAVIS, U.S. Navy, receives silver 'Dolphins' from commanding officer.

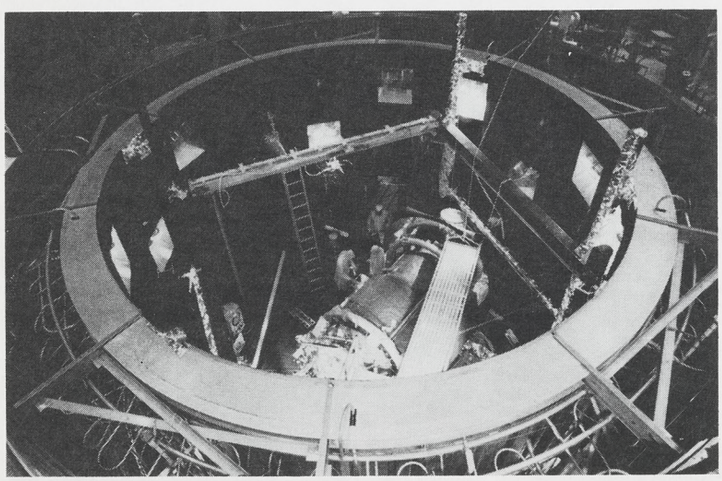
Northrop Highlights of A

It Has Been A Good Year for

THE NORTHROP YF-17 prototypes in test and evaluation flights at Edwards Air Force Base. Both aircraft completed 250 flights and logged more than 296 hours as of Dec. 13. Aerial gun firings, bomb drops and missile firings have also been accomplished.



THE ELECTRO-MECHANICAL Division observed 20th anniversary of HAWK missile activity with demonstration of Northrop-built HAWK loader for employees.



NASA'S APOLLO-SOYUZ docking module undergoes preparation for thermal vacuum test in the Space Environment Simulation Laboratory at Johnson Space Center.

1974 has been a year full of achievements for Northrop and its people. Increases in sales, profitability, order backlog, and jobs for employees are good news at any time, but are all the more remarkable when achieved in today's uncertain economic climate.

A review of the major accomplishments of Northrop's operating divisions illustrates the high level of business activity that has been underway over the past 12 months.

Of Northrop's major programs, the recently completed YF-17 flight test program has the greatest long-range potential. A Northrop victory in the

* * *

Aircraft Division

• **January** — First main-deck, side cargo door and panel set for 747 superjet shipped to Boeing.

• **April** — The first YF-17 advanced technology fighter is unveiled at presentation ceremonies at Hawthorne.

• **June** — First flight of the YF-17 at Edwards AFB Flight Test Center with Northrop chief test pilot Hank Chouteau at the controls.

• **July** — First aerial demonstration by USAF Thunderbirds in the T-38 Talon at Everett, Wash.

• **September** — First flight of two-place F-5F fighter/trainer at Edwards AFB with Northrop test pilot Dick Thomas at the controls.

• **September** — Two F-5Es flown in Switzerland for demonstration/evaluation.

• **October** — Production of the 2500th aircraft in the F-5/T-38 series of fighters and trainers — all on cost and on schedule.

• **November** — First units for the main fuselage section of the 747SP (Special Performance) superjet shipped to Boeing on schedule.

• **December** — Primary objectives essentially completed for two YF-17 prototypes in less than six months — half the time originally scheduled for the flight test program.

Electro-Mechanical Division

• **January** — Electro-Mechanical Division spearheads energy conservation program that ultimately resulted in an electrical energy saving of 400,000 kwh hours a month.

• **February** — Division was cited for Outstanding Community Service by the Anaheim Chamber of Commerce.

• **March** — EMD joins Rockwell International's CROTALE missile team. CROTALE, a French-designed air defense system, is a candidate for the U.S. Army's SHORAD (Short Range Air Defense) mission.

• **May** — EMD observes 20th anniversary of the division's participation in the HAWK program. HAWK, one of Northrop's longest lived programs, began in 1954 and has been worth $250,000,000 in contracts to date. EMD began the third decade of HAWK work with an additional $18.7 million in contracts for components of the New Improved HAWK.

• **August** — EMD shares in new contracts for the Boeing 747SP (Special Performance). The division builds floor beams and stringers for the 747.

• **September** — New test systems installed to facilitate work on the SACE (Shorebased Acceptance Checkout Equipment) hardware which the division is building for the U.S. Navy under contract with Lockheed Missiles and Space Division.

• **December** — Division backlog forecasted to hit $115 million by Dec. 31.

Northrop Services, Inc.

• **June** — Northrop Services, Inc., selected to provide support for the Environmental Protection Agency's National Environmental Research Center at Corvallis, Ore.

• **June** — Northrop Services, Inc., completed three-year support contract at NASA's Goddard Space Flight Center, Greenbelt, Md., and received a new three-year contract for support of the Test and Evaluation Division. The contract has a value of $7 million.

• **October** — Northrop Services, Inc., observed its fifth anniversary.

• **December** — Northrop Services, Inc., personnel observed their 10th anniversary of their support work for NASA at Johnson Space Center, Houston, Tex. Their work began in a joint venture with Brown & Root-Northrop, which was superseded by NSI in 1972.

f Achievements for 1974

ar for Northrop and Its People

U.S. Air Force Air Combat Fighter competition will open the door to a worldwide market for an estimated $10-15 billion in F-17 aircraft sales over the next 20 years. In addition to generating employment opportunities and providing job security, the program will also have a significant favorable impact on the U.S. balance of trade.

The wide-spread attention given to the YF-17, however, should not be allowed to obscure the company's other accomplishments.

All projects and programs highlighted here have contributed to Northrop's present success and together provide the basis for continued progress.

* * *

Northrop Architectural Systems

• **April** — Northrop Architectural Systems introduces System 24, a new storefront system with labor-saving features for easy installation.

Electronics Division

• **October** — Northrop-developed second generation Omega system (Cardinal), designed and produced in 1974, was delivered on time to the Air Force 2041 Omega Flight Data Collection Program. Data collection going on for determination of prototype specifications with USAF plans calling for procurement of 1000 automatic Omega systems for transport needs.

• **November** — Northrop selected as the Omega supplier (AN/ARN-99) for the Belgian Air Force C-130 program, marking the first penetration of an Omega system to satisfy navigational needs for foreign military aircraft.

Precision Products Department

• **April** — Precision Products Department receives subcontract to produce rate measuring assembly packages for use on SATCOM program, marking first commercial application of PPD systems. Subsystem package is to have an eight-year operating life.

• **May** — Contract award to Precision Products Department for design and development of rate gyro assembly to be used in flight control system of Space Shuttle orbiter vehicle.

Berkeley Scientific Laboratories

• **July** — Medical Data Systems Division wins pilot program utilizing Clindata 710 (Clinical Data Processing System) with the Kaiser Permanente facility in Santa Clara, Calif. A total of 74 Kaiser hospitals are in operation throughout the United States.

•**December** — Business Data Systems Division registered 23rd systems installation of its short history. Last year at this time, only seven systems had been installed. Opening of Hickory, N.C. office earlier in year allows business development in that area's substantial furniture manufacturing industry.

Defense Systems Department

• **July** — Defense Systems Department awarded initial increment of subcontract for over $5 million to develop and fabricate flyable prototypes of jamming transmitters and other ECM for B-1 Advanced Strategic Bomber.

• **September** — Defense Systems Department (Hallicrafters) delivered first complete pre-production AN/ALQ-135 for flight test and evaluation. This internal countermeasures set developed by DSD will enhance survivability and mission success of F-15 air superiority fighter.

Ventura Division

• **February** — $5.1 million follow-on production contract for MQM-74C target drones received from U.S. Navy.

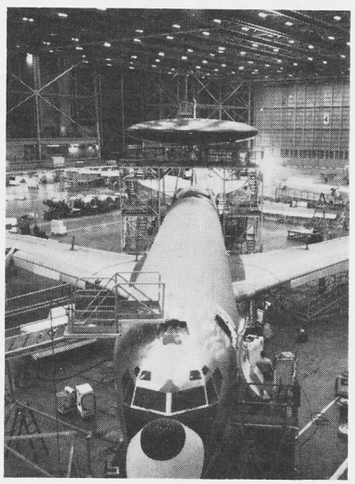
• **May** — Successful flights of NV-128 reconnaissance drone during Solid Shield tri-service amphibious landing exercises at Camp Lejeune, N.C.

• **August** — Completion of successful flight tests of the Variable Speed Training Target (VSTT) drone at White Sands, N.M. for U.S. Army. Development of RAST and other towbodies for VSTT.

• **September** — Successful in-water testing of NT-37C demonstrated to Netherlands and Canadian Navies. Tests took place over U.S. Navy Test Range, Keyport, Wash.

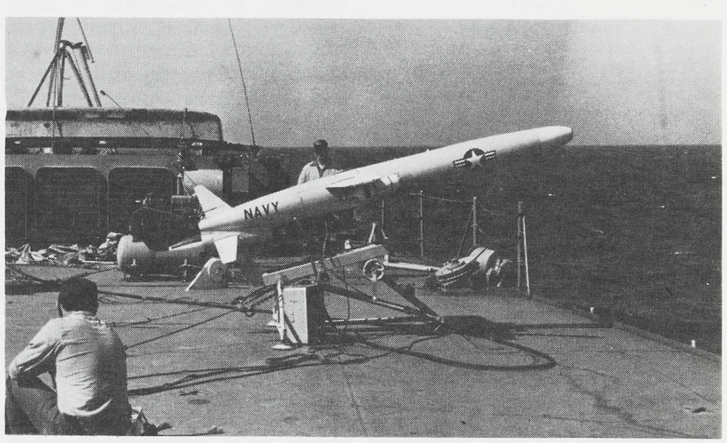
• **October** — $8.4 million contract for target drones and services received from Imperial Iranian Navy. Ventura Division target drones very successful in Iranian Navy exercises in Persian Gulf.

• **October** — First Mark 30 Mod I shipped to Barking Sands, Hawaii. Subsequent successful runs were made during November and December.

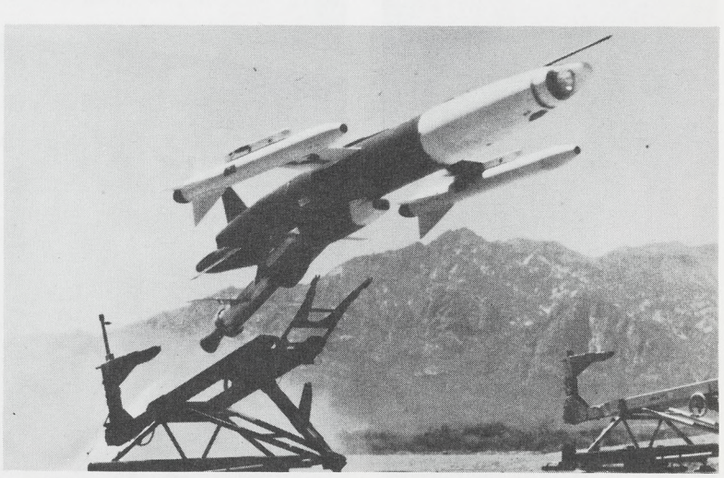


ELECTRONICS DIVISION milestone during 1974 was delivery to Boeing of the first navigation and guidance system for the Airborne Warning and Control System (AWACS) flight test aircraft.

PRODUCTION line assembly of equipment for integrated control and programming of B-52 ECM systems takes place at the Electronics Division's Defense Systems Department (DSD).



NORTHROP's NV-128 Remotely Piloted Vehicle (RPV) is shown just prior to launch aboard Navy LST off Camp Lejeune, N.C. RPV carried a 70 mm frame camera as a primary sensor and a forward oblique motion picture camera.



VENTURA DIVISION's new Variable Speed Training Target (VSTT) drone is shown being launched at the Army's White Sands Missile Range, N.M. Affixed to each wing is an infrared towbody which can be deployed from the target drone.

Terrain Simulator Facility Is Newest Engineering Tool At Ventura Division

Newest engineering tool at the Ventura Division is a Terrain Simulator Facility which provides a test bed for validating Remotely Piloted Vehicle concepts.

The Terrain Simulator is part of the facilities and capabilities of Aeronautical Tactical Systems which is headed by O. H. Caperton as manager.

Now, Ventura engineers can develop RPV operational techniques for remote control and data retrieval subsystems for tactical RPV operations.

RPVs are unmanned powered aircraft that can carry a variety of payloads including sensing equipment such as television, still cameras and armaments. They are "flown" from the ground, ship or air by a remote operator and are expected to play important roles in the newest defense concepts now being explored by the Armed Forces.

Simulator Facility

The Terrain Simulator Facility provides the means to evaluate an RPV's capability to detect, acquire and identify targets under simulated flight dynamics.

It can also be used to evaluate various television and electro-optical subsystems in relationship to simulated terrain under varying light conditions.

RPV operators can be trained using the Terrain Simulator. Various target acquisition and remote data display requirements can be proven out in simulated actual operations. Limited evaluation of Strike and Strike support sensors is also within the capability of the facility.

The Terrain Simulator Facility consists of a 40-foot long by 9-foot high panoramic scene made up of high resolution photographic murals and a three-dimensional terrain model capable of 360 degrees of rotation. Imagery is scaled one foot to 1000 feet and illumination is controlled to simulate various lighting conditions from bright sunlight to darkness.

Motion-Controlled

A motion-controlled gantry provides the dynamic flight translation of range, altitude and heading to the television sensor which is mounted on a servo positioner on the gantry.

The RPV operator is located in a separate room within the facility where the control and display console are also located. The console provides remote controls for all functions of the gantry and TV sensor such as speed, direction, pan, tilt, zoom, focus and iris. All operating parameters of the gantry and associated equipment are displayed by meters, lights and TV monitors.

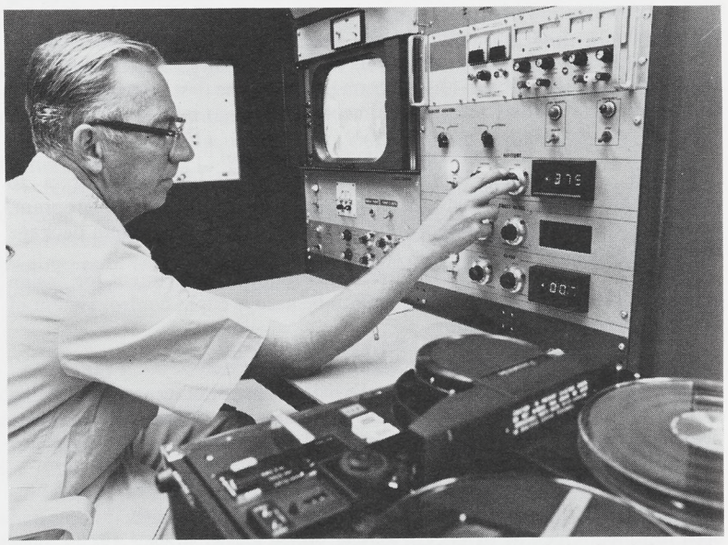
The operator has the capability of "freezing" a television frame through use of a scan converter while a video tape recorder is used for permanent records for playback and analysis.

The 9-foot orbiting three-dimensional model is made up of three types of terrain — mountains, farm land and desert area. Specific targets include a small village, roads, railroad, depot, bridge, airport and lakes. Such models as trucks, tanks, planes, fuel dump and a missile site are detachable and can be placed in various locations on the model or photographic mural.

The simulator has the capability of being converted to a complete hands-off operation from a hybrid computerized flight simulator located nearby. This means that, if required, preprogrammed navigation missions can be accomplished with a manual override available when desired.

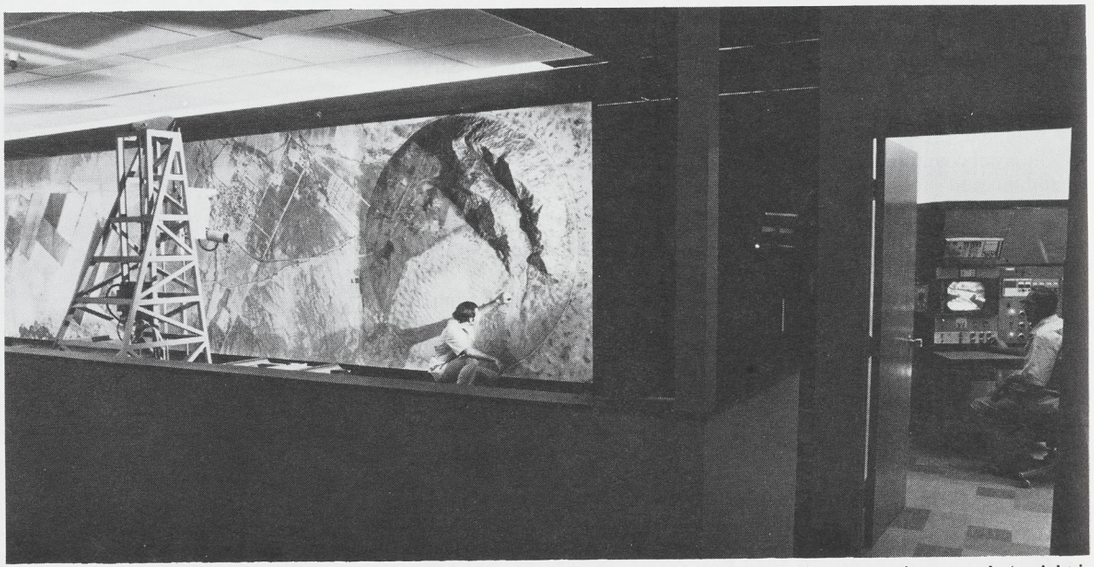
The Terrain Simulator gives the Ventura Division yet another engineering tool and furthers the division's capabilities as a leader in the new field of Remotely Piloted Vehicles.

TELEVISION SENSOR mounted on motorized gantry is adjusted by James Swistak prior to camera being 'flown' over large 40-foot long by 9-foot high panoramic scene by RPV operator in room at far end of panorama.



RPV OPERATOR Harry Clausen adjusts attitude controls of simulated Remotely Piloted Vehicle he is flying using the Terrain Simulator Facility. Operator has capability of controlling the RPV as it flies over the simulated countryside.

ROTATING THREE-DIMENSIONAL terrain model is checked during test.



OVERALL VIEW OF Terrain Simulator Facility shows motorized gantry at left, where television camera is mounted. At right is control room where RPV operator 'flies' the Remotely Piloted Vehicle while watching television screen.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Motorcycle, 1973 Yamaha 100 Endura, driven 50 mi., many extras, $450. 213-679-3787.

Volkswagen, 1969, auto., 47,000 mi., $1000. 213-675-4306.

Volkswagen, 1965, reblt. eng., new tires, $700. 213-943-2803.

Pontiac, 1965 Catalina station wagon, $425. 213-541-1568.

Maverick, 1974, 2-dr., 7000 mi., auto. trans., air, 302 V-8 eng., $3695. 213-676-6352.

Pontiac, 1968 LeMans 350, a/c, r/h, console, $1600. 213-677-4780.

Dodge, 1974 B-100 van, AM/FM cassette player, slant 6-cyl., under 4000 mi., $4800. 213-834-5748, or 213-549-2579.

Cougar, 1970 XR-7, a/c, AM/FM stereo radio, $2300. 213-372-1457.

Vega, 1974 GT, 4-cyl., 4-spd., a/c, 13,000 mi., $2700. 805-498-3451.

Capri, 1973, V-6 eng., 20,000 mi., AM/FM tape deck, radio, 4-spd. trans., $3000. 213-866-8977.

Rambler, 1962 4-dr., auto. trans., r/h, 6 cyl., 33,200 mi., $225. 213-923-9957.

Pickup, 1974 Ford ¾-ton, F-250, $3990. 213-320-8297.

Motorcycle, 1969 Bultaco, $200. 213-397-6490.

Volkswagen, 1973, $2295. 714-531-6738.

Buick, 1966 LeSabre, air, power, $425. 213-547-9149.

Motorcycle, 1973 Kawasaki 125 Enduro, many extras, $425. 213-325-1190.

Ford, 1966 Fairlane, o/hauled trans., $500. 213-329-3968.

T-Bird, 1963, $300. 213-837-7286.

Motorcycle, 1969 Harley Sprint, $350. 213-641-5274.

Motorcycle, 1973 250cc Yamaha, take over $35 mo. pymts. or $800. 213-672-2338.

All Terrain Vehicle, 1971 Honda ATC-90, many access. incl. helmets, $300. 213-378-3920.

Motorcycle, 1971 Suzuki T500, 8700 mi., 2 helmets, lock & chain, $550. 213-320-5154.

Volkswagen, 1960, $450. 213-676-9702.

Chevrolet, 1959 Kingswood, 9-pass. sta. wagon, orig. owner, $150. 714-633-5826.

Chevrolet, 1962 Corvair, a/t, $200. 213-373-8211.

Maverick, 1970, r/h, 3-spd. trans., $995. 213-887-1947.

Motorcycle, 1972 Yamaha 350 rx5, street, all access., $600. 213-448-8831.

Pickup, 1969 Ford, ¾T, auto., 360 cu. in., $1280. 213-378-1026.

Miscellaneous For Sale

Bicycle, lady's 3-spd. Hawthorne, $20. 213-377-8753.

Boat, 22', trailer, inbd. eng. being reblt., $500. 213-328-3182.

Oven, harvest gold, O'Keefe & Merritt, 36" delux dble., self-cleaning, $350. 213-324-2021.

Wheels, Cragar, 14", set, $30. 213-377-9842.

Surfboard, Rick Bonzer kneeboard, $60; sailboat, Sea Snark, 11', never used, $80. 213-376-7439.

Ski Boots, men's Swiss custom 11 narrow, $25; women's, 6½, $15. 213-556-2728.

Guitar, bass & Vox Kensington amp., $175. 213-542-6436.

Bicycle, girl's direct dr. sidewalk-type, $12. 213-374-5113.

Books, old & unusual, $2 to $35. 213-321-2848.

Boat, 12', recently refinished, trailer, extras, $300. 213-376-7510.

Camera, Polaroid 100, w/attachs., case, $25; movie camera, Revere 8mm turret, case, $10. 213-860-5064.

Stove, 1973 Signature, warmer shelf, self-cleaning oven, 30", $225. 213-865-9280.

Miscellaneous For Sale

Oven/Broiler, Gaffers' & Sattler, blt-in, $120. 213-323-6840.

Sailboat, 14' Satellite, cover, trailer, $700. 213-374-8608.

Aquarium Cabinet, 6', w/2 10-gal. aquariums blt-in, access., $80; couch & loveseat, 5 mos. old, $165. 213-371-4506.

Game Set, octagonal, walnut, 4 black leather chairs, on ball coasters, $200. 213-645-9253.

Pups, AKC toy poodles, white male, black female, $175. ea. 213-370-6400.

Skis, Head, 205cm lg., $35; ski boots, Koflach, $25. 213-645-6664.

Mobile Home, 1973 Seacreast, 24'x54' 2-bdrm., 2 bath & den, in Lancaster, $11,000. 213-296-6792.

Cassette, Ampex stereo, 2 spkrs., $65. 213-363-6996.

Bicycle, men's 3-spd. Huffy, $30. 213-377-4694.

Pistol, Colt .45, A.C.P., N.M. 300 rds. ammo., reloading dies, $185. 213-530-2710.

Desk, hvy. wood, exec. 8 drwrs., $125. 714-522-1608.

Reloaders, 12 ga. Herters, turret mod., extra bar & full assort. of bushings, wooden carrying case, $50. 213-644-7079.

China, Noritake pure white, 12 pl. settings & serving pcs., $95. 213-676-3050.

Freezer, Amana chest-type, 7½ cu. ft., $100. 213-375-8993.

TV, 14" color, $75; bicycle, 26" 3-spd., $25; bicycle, 26" 3-spd., lady's, $25. 213-644-1768.

Radio-Phono-TV comb., mahogany cabinet, $25. 213-324-7059.

Power Mower, reel, 18", 4 cy., Craftsman, adjust. cutting hgt., plastic grass catcher, manual & parts list catalog avail., $150. 213-973-0956.

Pistol, 22 cal. Ruger Mark I target mod., 9 rd. clip, target grips, adjust. sights, $60. 714-554-2320.

Drafting Machine, Bruning, $70. 714-524-1531.

Crib, w/mattress, $10. 213-378-6330.

Refrigerator, Hotpoint, white, 13 yrs. old, frostfree, $65. 213-377-5931.

Piano, provincial style, console, 3 yrs. old, $600. 213-542-5280.

Freezer, chest-type, $100. 213-325-8932.

Guitar, Electra imitation Les Paul, 2 mos. old, $125. 213-398-2314.

Show Tank, 8-gal. Pemco, w/stand, fluorescent lighting, fish, $30. 213-675-2514.

Head & Foot Boards, 2 Spanish, twin, w/rails, $75 ea. 213-675-5265.

Boat, 1966, 17' Bell Boy, 110 h.p. 1968 Mercury eng., all canvas, 1966 Sears big whl. trailer, $1400. 805-498-2496.

Sofa Bed, queen size, $195; dishwasher, portable, $95; headboard, king size, $7.50. 213-821-8150.

Niche, dble. in Westwood Memorial Park, $350-$400. 213-644-6433.

Mobile Home, 20x60, in Bloomington, 2-bdrm., den, screened in porch, awnings, 2 sheds, 3 yrs. old, $11,500. 213-644-5345 or 213-973-1048.

Dryer, Sears Lady Kenmore, elec., $160. 213-373-1303.

Chest, 5 & 4 drwr., $50. 213-863-3758.

Cemetery Lot, dble. interment, El Portal sect., Inglewood Park, $750. 801-731-2929 collect.

Motorcycle, 1971 Bultaco-Matador isdt replica MK4, complete w/isdt pipe, $45. 805-498-3813.

Stereo System, Pioneer SX828, dual turntable, 4-way spkrs., $650. 213-372-5171.

Refrigerator, G.E. frostfree, dble. dr., coppertone, $75. 213-375-8148.

Awning, for camper, 8', $25. 213-675-6020.

Sofa, 8' blue-green wool, $95. 213-541-3280.

Radio, Datsun pushbutton AM/FM stereo, near new, $75; tires, 2 white wall, $5 ea.; ironer, Ironrite, $50. 213-325-6546.

Sweater, hand-crocheted, lady's, beige, lge. size, $35; cape, hand crocheted, navy blue, both washable, $25. 213-865-5014.

Transaxle, 1962 VW, $95; door, 1962 VW, r.h., complete, $25. 213-542-2390.

Bicycles, boy's 3-spd., 20", & 10-spd. 24", $60. or sell separately. 213-663-3593.

Lens, 250mm, for Mamiya RB-67 camera, $325. 805-498-2787.

Golf Clubs, 1972 Lynx, stiff shaft D-4, 4 woods, 11 irons, Ping putter, bag, $375. 213-675-8175.

Miscellaneous For Sale

Watch, 1974 Rolex Oyster, $500. 213-483-3939.

Golf Clubs, complete set, MacGregor regist. irons, Wilson woods, cart & bag, $150. 213-375-2747.

Skis, 208 cm Killys, metal-fiberglass, $30. 213-376-6260.

Bicycle, MX Stingray, many extras, $35. 213-377-1074.

Ski Boat, 16' Glen-L., 283 Chev., wet heads, 4" channel trailer, 80% compl., $450. 714-524-6163.

Typewriter, Brother's elect., very little use, $80. 213-679-0043.

Bicycle, boy's 3-spd., Senator, $30. 213-323-8089.

Dinette Set, 4-pc., almost new, $50. 213-599-3666.

Pups, Weimaraner mix, $10. 213-679-7387.

Crib, white, Kantwet mattress & sheets, $85. 213-645-7974.

Pool, 15'x25'x4', complete w/decking, never used, $450. 213-920-1579.

Horse, morgan/quarter, 9 yrs. old, black gelding, $400. 213-373-4298.

Desk, 30x60, blond finish, formica top, l.h. typewriter well, $45; cat basket, plastic covered rattan, w/cover, never used, $8; toaster, chrome, 2 slice, $7. 213-645-4265.

Tape Player, Pioneer in-dash AM-FM-8-trk. stereo, 5 mos. old, 1 yr. guar., $100. 213-754-8126.

Tires, 4 Datsun pickup, 6x14, 6-ply, 6000 mi., $80. 213-329-7333.

Motorcycle Trailer, all metal, carries 4, $175. 714-772-9313.

Boat, 19' cabin cruiser, sleeps 4, $600 or w/ship-to-shore radio phone equip., Sonar 30, $800; Massage-A-Belt, Samson, $50. 213-676-0653.

Camper Shell, 8', insulated, w/boat rack, $250. 805-498-3131.

Dryer, hvy. duty, elect., 220 V., used 9 mos., $90. 213-371-8629.

Loveseats, 2 matching vinyl, turquoise, $25 ea. 213-679-6247.

TV, b&w Magnavox, & hi-fi, $79.95. 213-323-2289.

Side Pipes, chrome, glass packed for Datsun or Toyota, $55. 213-329-9664.

Sailboat, 14' racing-type, & trailer, glass o/mahogany hull, full batten sails, $600; table, Duncan Phyfe w/ext. leaves & 5 chairs, $150; bedroom set, box springs & mattress, matching triple dresser/mirror & nightstand, $90. 213-596-8860.

Bicycle, Fair Lady Schwinn, 20", $45. 213-430-5027.

Boat, fishing/ski, 35 h.p. Mercury motor, trailer, $300. 213-325-8267.

Record Player, Zenith, dia. needle, 4-spds., w/changer, $20. 213-676-9989, 213-676-1983.

Skis, Glastar MKI, 195 cm., bindings, $35. 714-539-1220.

Aquariums, 50 & 20 gal. tanks incl. access., $55 & $25. 213-675-7357.

Pups, German shepherd, 9 wks. old, purebred, no papers, $20 ea. 714-595-0709.

Telephoto Lens, auto. Rexatar 135mm f 2.8 bayonet mount, $80. 714-979-5498.

Pool Table, bumper-type, slate bed, 45x30, access., $60; sewing machine, White, cabinet, $60. 213-377-5853.

Fenders, for 1965 VW, 2, $20; basketball backboard & hoop, $10. 714-925-3516.

Organ, Hammond Autochord, $800. 213-391-5046.

Camera, Polaroid, flash attach. & case, $50; typewriter, Sears port. manual, $30. 213-371-0621.

Washer/Extractor, Hoover port., harvest gold, $100. 213-370-9119.

Monkey Pod Wood, 3" slat, 3x4' cut from pod tree, $100. 714-496-5930.

Boat, 17' flat bottom, V-drive, Hemi eng., $500. 213-641-9813.

Skis, Omega, w/bindings, $40. 213-498-2300.

Pool Table, 8', $115. 213-675-2331.

Throw Rugs, acrylic fiber, 2 approx. 4'x6', $5 ea.; garden cart, $7.50; heater, elect., 1600 w., $7.50. 213-377-3806.

Window & gasket, rear cab, flat, for 1971 Ford pickup, $15; spare tire mount, front bumper, $10; spare tire mount, trailer bumper, $10. 213-378-7846.

Car Radio, FM stereo cassette, complete w/quick disconnect, used 3 mos., $75. 213-425-7079.

Ski Boat, 14', trailer, 40 h.p. Evinrude motor, elect. start, 4-6 pass., $495. 714-633-5826.

Miscellaneous For Sale

Silver Coins, Calif. commemorative society, set of 60 in spec. holder, limited coinage, history of Calif. $1000. 213-373-4641.

Lightmeter, Minolta auto-prof., $60. 213-835-3869.

Mags, 14x7 Appliance Ford, 2, $25 ea.; mags, 14x6 Cragar, 2, $25 ea.; tires, G60-14 Tiger Paw, 2, $10 ea. or $100. whole set. 213-429-8018.

Piano, Bungalow upright, $250. 213-675-0079.

Radio, portable,5-band AM/FM-SW-WB, leather case, $39.95. 213-322-3306.

Hot Water Heater, 40-gal., $100. 213-292-7663.

Bicycle, boy's 20" Schwinn Sting-Ray, $55; mini bike, Taco, 3½ h.p. Tecomsec eng., $65; guitar, elect., dble. pickup, 2-vol. controls, $30. 213-675-1057.

Wanted To Buy

R.C. Equipment, 2 or 3 channel, suitable for glider. 213-375-8148.

Tool to remove bung from Golden Gate type beer kegs. 213-422-3932.

Mustang, 1965 - 1970, 6 cyl., good condition. 213-943-2803.

Frame for trundle bed. 213-672-6319.

Hornet, 1973 Hatchback, or Duster, 1969-72, cash or trade my 1968 DeVille,must have air. 213-481-6342.

Rambler 330, 1965 station wagon, in driving condition, reasonable price. 213-835-9376.

Piano, for beginner. 714-956-7838.

For Sale Or Trade

S&H Green Stamps, 2 books, trade for Blue Chip Stamps, 2 books. 213-376-7477.

Go Kart, $175 or trade for trail bike. 213-638-4037.

Lost and Found

Pocketknives, 2-blade Case & 3-blade Kabar, at Anaheim. 714-529-6984.

Kitten, approx. 3 mos. 213-326-6200.

Personals

To all the friends who by their sympathetic manifestations have lightened our sorrow, we extend our most heartfilled thanks paid to our husband & father. Howard L. Chadwick. MRS. ROSE MARIE CHADWICK & DAUGHTER.

To all of Charles Bate's friends at Northrop, especially at Mariposa & Traffic & Shipping Dept. for their many expressions of sympathy. FERN BATE, BETTIE RUPP, DONNA STINSON & THE BATE FAMILY.

A sincere thanks & appreciation throughout the Aircraft Div., for the kindness & sympathy at the recent loss of my father, Joseph H. Cloutier. JOSEPH A. CLOUTIER

I wish to thank everyone for the cards, calls, & flowers I received while in the hospital & at home. PEARL CARR

Thank you for your thoughtfulness & kind expressions of sympathy at a time when it was deeply appreciated. MRS. BERNICE MAKI, VICTOR & LAURA

Many thanks to all my friends in Planning for the get well cards sent to me during my recent illness. MIRIAM GREEN

Free

Kittens, Manx, Tortoise. 213-644-5348.

Dog, German shorthaired pointer, female, 3 mos. old. 213-391-7513.

Dog, female, spayed, white long hair, 2 yrs., had shots. 213-676-6352.

Cat, male tabby, declawed & altered. 213-644-7079.

Dog, mixed shepherd, 1 yr. old, altered, shots. 213-641-8269.

Rentals Offered

House, 3-bdrm., wall-wall carpet, blt-in stove, 2-car gar., fenced yd., N. Long Beach area, avail. Jan. 1, being transferred, $250 mo. 213-423-4036.

NORTHROP NEWS

Vol. 32 No. 12

Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft Division; Jim Ramsey, Electronics Division; Park Irvine, Ventura Division; Chuck Campbell, Precision Products Department. Correspondent: Northrop Architectural Systems. Wanda Fisher.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

St. Jude's Hospital Receives First EMD Christmas Tree

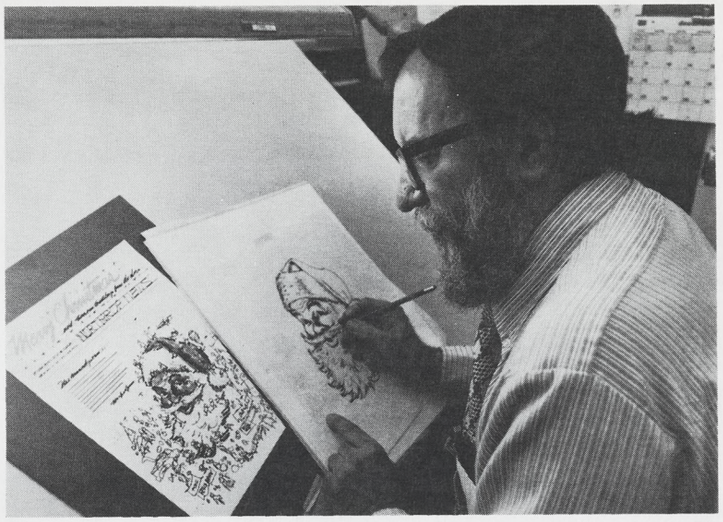
The first Christmas tree to be cut from 2000 trees planted on surplus Northrop property at the Electro-Mechanical Division was presented by division employees to the patients of St. Jude's Hospital in Fullerton.

The trees were planted by the Horticulture Club as an environmental improvement. They serve to reduce dust on empty company area, and to act as a noise barrier between the plant and the Riverside Freeway.

Plans are to cut 500 trees each year for Christmas trees for EMD employees at the plant. The trees will be replanted to provide a continuing program.

FIRST CHRISTMAS tree to be cut from Electro-Mechanical Division's Horticulture Club tree farm was presented to the patients of St. Jude's Hospital, Fullerton. Here Sister Bonita, right, and Sister Mary, get pointers on how to chop down the tree from Don McInnis, vice president, Operations, and Betty Schulz, club president.

JOE HAMER, intelligence systems analyst, Electronics Division, Palos Verdes, shows off Christmas trees he makes for employees from cores of carbon typewriter ribbons. He began making trees in 1968 and so far has produced 118 of them. Joe says that 70 ribbon cores used for each tree represent 6,804,000 characters or 1,360,800 words, which amounts to 2982 typed pages or 10.4 miles of typed line. He doesn't charge for trees, but proceeds donated go into the Tactical Avionics coffee fund for Christmas gifts for needy families. Looking on are Cathy D'Amico, public relations assistant, and Miriam Crawford, receptionist at Palos Verdes.



BOB PECK, commercial artist in Aircraft Division Graphics, created the cover for this year's Christmas editions. Bob joined Northrop in 1955. He began his art career as a two-year-old scribbler. Years of study and work turned his scribbling into fine art which is represented in many California galleries. After many years of painting, he reversed the trend and went back to scribbling at school and church carnivals and charity functions where he doubles as Mr. Scribble doing scribbles for children and adults alike.

Optimist Club of El Segundo Honors Zollinger's Daughter

Debbie Zollinger, daughter of Dean Zollinger, program coordinator, Aircraft Division, was one of 20 outstanding young people to be honored by Zone 3 Optimist Clubs during Youth Appreciation Week, Nov. 10 to 16.

Debbie Zollinger

Debbie was chosen by the El Segundo Club for volunteer work at the Redevelopment Center for the Handicapped in that city. She was commended for her work by The Honorable Les Balmer, mayor of El Segundo, at a luncheon Nov. 13. That same evening, 125 Optimists gathered at a dinner with the 20 youth award winners and their parents as guests.

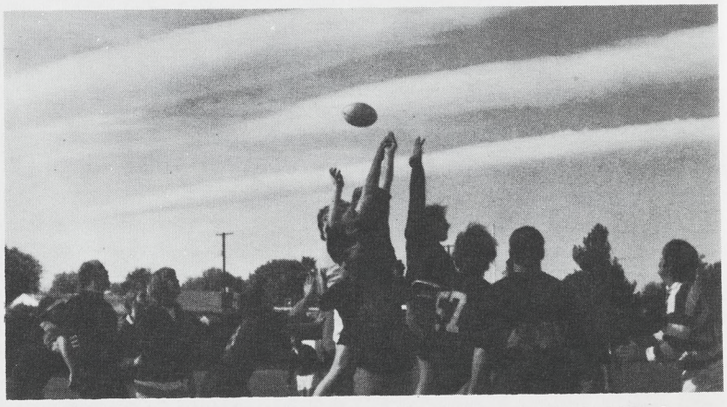
Debbie is 14 years old and a freshman at Leuzinger High School.

Purchasing Offers SR-50 Calculators At Reduced Price

Corporate Purchasing Administration announces the price on Texas Instruments SR-50 calculators is reduced to $119, for immediate delivery.

The unit may be purchased through Olympic Sales Company, Inc., 216 S. Oxford Ave., Los Angeles, CA 90004, direct or by mail.

For additional information contact corporate Purchasing Administration, Century City exts. 428 or 429.



RUGGED COMPETITION is encountered weekly during rugby play by Mike George, (center jumping for ball) and Pete Williard, third from left. Persons interested in playing rugby should contact Williard or George on Aircraft ext. 2342.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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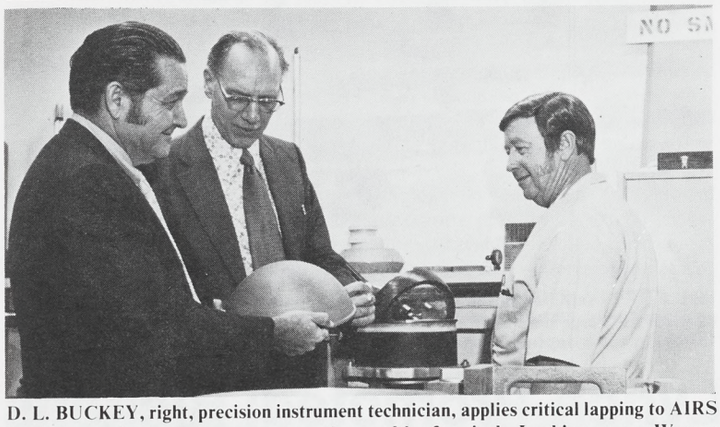


D. L. BUCKEY, right, precision instrument technician, applies critical lapping to AIRS hemisphere where tolerances are to a thousandth of an inch. Looking on are Warren Schreyer, center, project manager, and Paul Mansfield, manufacturing engineer.

Taylor Receives High Praise From Flight Research Facility

Bill Taylor, program field engineer, GATE (Global Atmospheric Research Program Atlantic Tropical Experiment) was the subject recently of a highly complimentary letter received by A. B. Lipscomb, vice president and manager, Avionics Department.

Bill Taylor

The letter written by Dr. James D. McFadden, director, National Oceanic and Atmospheric Administration (NOAA), Research Flight Facility, Miami, Fla., stated;

"For the entire period of GATE, Bill Taylor daily and diligently kept watch over the AWRS and C5 systems on the C-130 and the mini-AWACS system on the DC-6. During Phase I of the experiment there were an inordinate number of problems that arose on both aircraft. On the C-130 most of these problems were associated with overheating of the CP2 computers and the AWRS interface with the aircraft power distribution . . .

"On the DC-6 the mini-AWACS performance was well below specification during Phase I. Admittedly, all of us were concerned including Bill, but his persistence in finding and recommending a solution to the problem were, in my opinion, paramount in accounting for the fantastic operation of this system in Phases II and III of the experiment. From an operational point of view, RFF did not miss a single mission because of equipment failure."

NEW OFFICERS of the Management Club board of control are from left, Jack Brennan, vice president; Larry Beuder, president; Jeannie Zubak, secretary; Bill Finch, treasurer; and Charlie Brewster, sergeant-at-arms.

MIT Lauds the Electronics Division for AIRS Project

A prime example of application of the Electronics Division's high level of technology in avionics guidance systems has been lauded by the program management in connection with work in the AIRS (Advanced Inertial Reference Systems) program.

AIRS components are being manufactured at the Hawthorne facility under contract to the Massachusetts Institute of Technology's Draper Laboratories, Cambridge, Mass.

MIT has been working under a contract from SAMSO (Space and Missile Systems Organization) for development of a Missile Performance Measurement System (MPMS) and the division was asked to make intricate components of a new floated ball inertial platform similar in concept, but different in mechanization and physical implementation from the inertial platform for the C-5 transport.

Contract Award

The Avionics Department has been awarded a contract to build power shells, locking rings and equatorial rings for five of the systems, and the first two have been completed and shipped to MIT ahead of schedule.

In a letter to David N. Ferguson, corporate vice president and division general manager, MPMS/AIRS Program Manager Ain Laats, said. "I would like to express to you our thanks for your company's contribution to the design and assembly of the first MPMS/AIRS Inertial Measurement Unit for SAMSO. Northrop's contribution in both design and fabrication was considerable. The equatorial ring and power shell assembly built by Northrop at Hawthorne, California, is considered one of the most difficult critical assemblies to fabricate. The first Northrop-built unit is operating satisfactorily."

Key Members

Key members of the team responsible for this important project are: J. M. Brust, director, Product Design and Microelectronics Engineering, who headed up the effort; Warren Schreyer, project manager; Paul Mansfield, manufacturing engineer; and a team effort by personnel in the Operations Department directed by Harold Beadle.

"Our performance on this very difficult project has again established Electronics Division's reputation in the most advanced application of guidance system technology," Brust said. "We met our commitment by completing the first two sets ahead of schedule with outstanding results, and are currently working on three more sets. What made the project particularly difficult is that the power shells are made of nickel and the rings of berylium. We were able to do this because we have expanded on our technology developed for the C-5 IMU," he concluded.

ROSS F. MILLER, group vice president, Communications and Electronics, was on hand to congratulate the new board of control for NRC during installation ceremonies. From left, Bob Cobb, sergeant-at-arms; Jeanne Saxon, treasurer; Marian Owens, secretary; Glen Gardner, vice president; Dennis Mahaney, president; and Miller.

Patent Office Issues Revised Patent Award Plan Booklets

The corporate Patent Office has issued a newly revised patent booklet, according to W. M. Graham, corporate patent director.

The booklet stresses the importance of identifying, documenting and reporting inventions and items of new technology developed under government contracts. It also contains general information concerning patents, copyrights and trademarks, and employee's rights and obligations to the company as well as the government.

The Northrop Patent Award Plan is intended to encourage employees to create new and useful inventions relating to the company's fields of endeavor.

Disclosure of inventions should be made through the patent representative of the division in which the inventor is employed. J. E. Crawford is the Aircraft Division patent representative; Mel Rich is Ventura Division representative; Dick Larson, Electronics Division; and R. B. Wrenn, Electro-Mechanical Division.

Full invention disclosure should include a clear, concise written description of the invention, operating details and results obtained, and should include sketches or drawings identifying the essential elements or components. A working model of the invention need not have been built and tested at the time of initial disclosure.

A $25 disclosure award is made for all inventions relating to the company's business, if accepted and acted upon by the corporate Patent Administration office.

A cash award of $100 is made when the application is filed and an additional $300 award is made when the application results in an issued patent. Inventor or inventors become eligible for a patent award only after it is determined the invention is valuable to the corporation and a patent application is filed.

Where more than one inventor is included in a single patent application, the cash award is divided equally among the co-inventors, but no co-inventor will receive less than $50.

Employees interested in more specific requirements of invention or new technology reporting should contact the corporate Patent Office or their division patent representative.

Copies of the revised patent booklet are available from the representatives or in the Employee Services office, Aircraft Division.

WESTEC '75 Coming Soon

The 1975 Western Metal and Tool Exposition and Conference, WESTEC '75, will be held at the Los Angeles Convention Center from Mar. 10 to 13.

This conference is co-sponsored by the American Society for Metals and the Society of Manufacturing Engineers, whose combined membership totals more than 80,000 and are considered the two largest national professional technical societies.

Participants from the Aircraft Division will include: D. L. Stansbarger, who will present a paper "Advanced Composites Applications" on Mar. 11; and A. N. Siggson, who will chair a session "Manufacturing with SI Metrics" on Mar. 13.

Siggson advises that the Professional Registration Workshop for qualified manufacturing engineers is scheduled for 9 a.m., Mar. 13.

It is anticipated that more than 20,000 engineers, metals and manufacturing executives, scientists, educators, and students from the Western United States and Canada will attend or participate.

Northrop People In the News

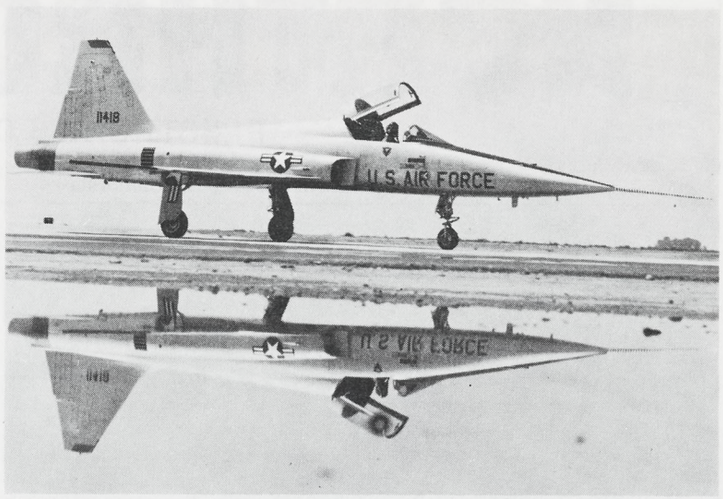
Dr. Donald A. Hicks was elected corporate senior vice president, Technical, by the Northrop board of directors.

Louis D. Hill, manager of Aircraft Division Logistics, has been elected chairman of the Spare Parts Committee of the Aerospace Industries Association of America, Inc.

R. L. Fischer, David E. Steybe, and Ed Smith, all of Electronics Division, presented papers at the Institute of Navigation's second OMEGA Symposium in Washington, D.C. in November.

Jo Ann Dover has been named manager of Public Relations for Page Communications Engineers, Inc., in Vienna, Va.

Doris Robinson, Aircraft Division, has assumed the responsibilities as welfare and financial counselor for the NORAID program. Additionally, she is appointed Aid and Blood Bank chairman.



THE F-5E IS reflected in the water as it pauses on the runway ready for take off at Edwards Air Force Base after a recent rainstorm.

Lynch Promoted; Ricketts Named General Manager

Frank W. Lynch, who has headed the Electro-Mechanical Division in Anaheim since its formation February 1969, has been elected corporate senior vice president of Administration.

James M. Ricketts succeeds Lynch as corporate vice president and general manager of the Electro-Mechanical Division.

The appointments, which became effective Dec. 18, 1974, were announced by Thomas V. Jones, president and chairman of the board.

Lynch succeeds George F. Douglas, who will be on special assignment to the chairman and president until his retirement Mar. 1.

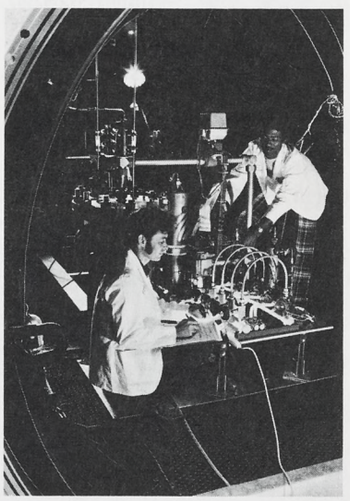
Before becoming general manager of Electro-Mechanical Division in 1969, Lynch had been vice president of Nortronics Division since 1962. Prior to this assignment he served almost 10 years in key technical and managerial positions. His major assignments in these years included: director, Apollo Task section, vice president, Electronics Systems and Equipment; and assistant chief of Missile Guidance Control, where he was instrumental in developing the inertial guidance system for the Snark missile.

Ricketts had been vice president and assistant general manager of Electro-Mechanical Division since July 1974. Prior to this, he was president of Northrop Carolina, Inc., a wholly owned subsidiary of Northrop.

He joined Northrop as staff assistant in 1951 and since that time has been directly involved in developing the Anaheim Department's major products, and helped establish the division's outstanding high quality, diversified production.

Ricketts received his basic education in industrial engineering, at the General Motors Institute. He is a graduate of the Executive Management Program at the University of California in Los Angeles and studied systems management at the National Defense Education Institute.

Prior to his assignment as president of Northrop Carolina, Inc., he was vice president of Operations at Anaheim. During this period he received the Montgomery Award from the National Society of Aerospace Professionals for his work on the Polaris program.



JESSE GARCIA AND EUGENE CARROLL, Northrop Services Inc. technicians, set up the pumpload valves on the pump hydraulic test stand at NASA's Johnson Space Center, Houston, Texas. The test stand is being utilized for testing hydraulic components for use on the NASA Space Shuttle.

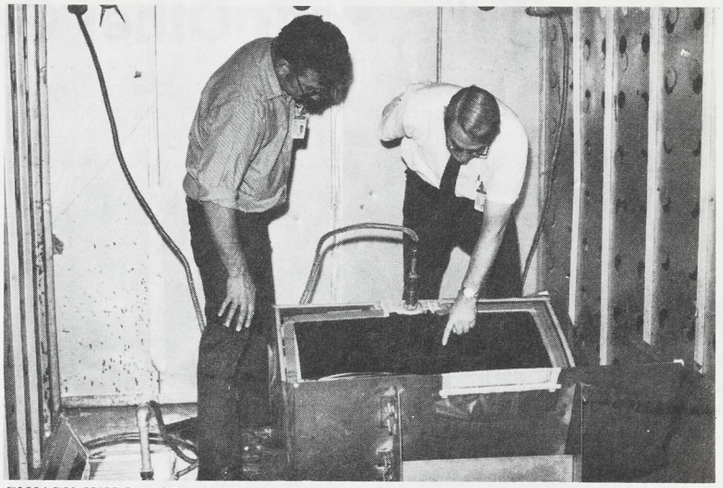
Manufacturing Research And Development

'Productivity Through Technology'

With apologies to General Electric, Manufacturing Research and Development can say that "productivity" is our most important product. Given today's emphasis on reduced costs, Manufacturing Research and Development stands as a major vehicle by which costs can be lowered without sacrificing quality of performance.

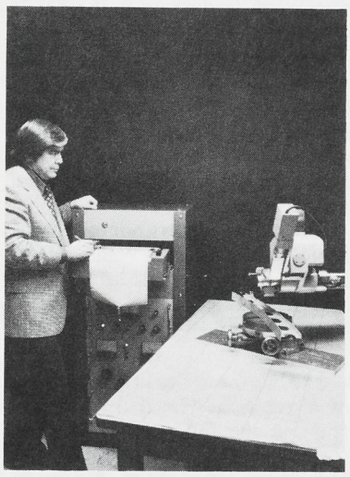
With 64 men and 9 women, all facets of manufacturing are continually examined and, more importantly, re-examined to find a better way. Nothing is exempt from the probing, questioning, skeptical R&D investigator. This is especially true in those manufacturing techniques that are considered established and stable.

Manufacturing Research and Development engineers have found through experience that when a manufacturing practice has been long established, it often becomes either partially or wholly obsolete. Such practices must be continually upgraded. In addition, new materials, equipment and techniques are being developed by Manufacturing Research and Development for use by manufacturing operations. Finally, new practices developed by other companies in the industry are investigated for potential application at Northrop.



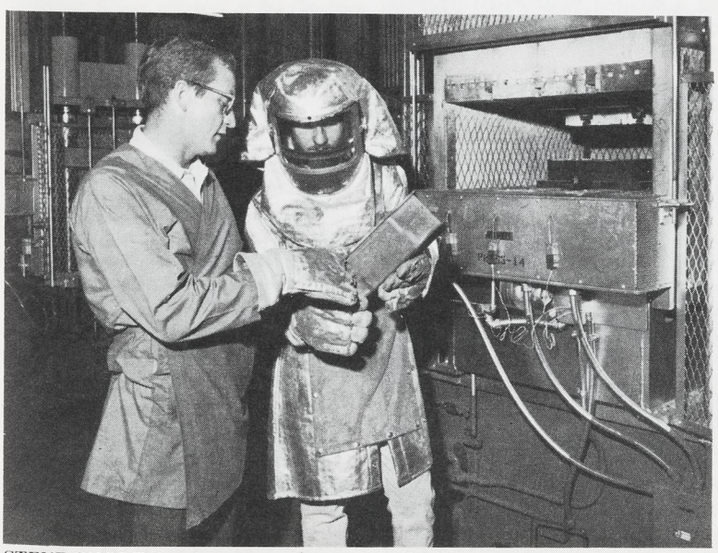
CHUCK WILLMON, research assistant and Harvey Linebarier, research specialist, are making final checkout of the fuselage skin lay-up in a curing tool prior to the vacuum-heat cure cycle. Careful checks insure quality.

CHUCK WILLMON and Harvey Linebarier are preparing a tool for fabrication of fuselage bulkheads. This bulkhead is at a fuselage station which is orthogonal to the two engine air ducts. Steve Moskowitz,research assistant, left, videotapes procedures.

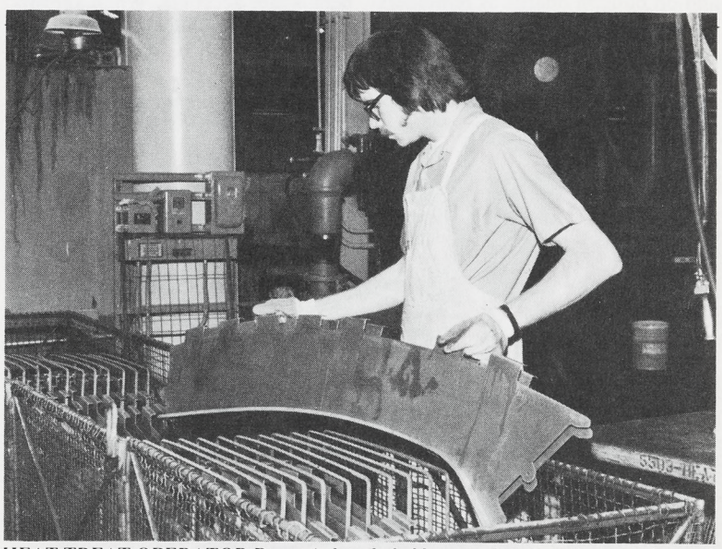


X-RAY STRESS analyzer operated by Dick Rosas, senior manufacturing engineer, used to find levels of applied or residual stress in an aircraft part.

VERN JOHNSON, research assistant, trims lightweight wing test spar that is formed to close tolerances. Conventional spars are machined from extrusions.



STEVE SHORT, hot draw press operator, and Ed Oliver of Manufacturing Research and Development, discuss a small F-5E draw-formed part. Manufacturing Research and Development has been working with the Titanium group on development of the hot titanium forming facility which includes hot-draw forming and conventional hot sizing.



HEAT TREAT OPERATOR Roger Aylstock, holds parts that show the type, size, and configuration of aluminum components that can be successfully heat treated using a polyalkylene glycol solution for quenching. When parts were quenched in water, the resultant distortion required extensive rework to make them acceptable.

Aviation Hall of Fame Honors John K. Northrop Along With Four Other Great Aerospace Pioneers

John K. Northrop, co-founder of Northrop Corporation, has been named to the Aviation Hall of Fame in Dayton, Ohio, along with four other aviation pioneers. For the first time in the 13-year history of the Aviation Hall of Fame all honored are still living.

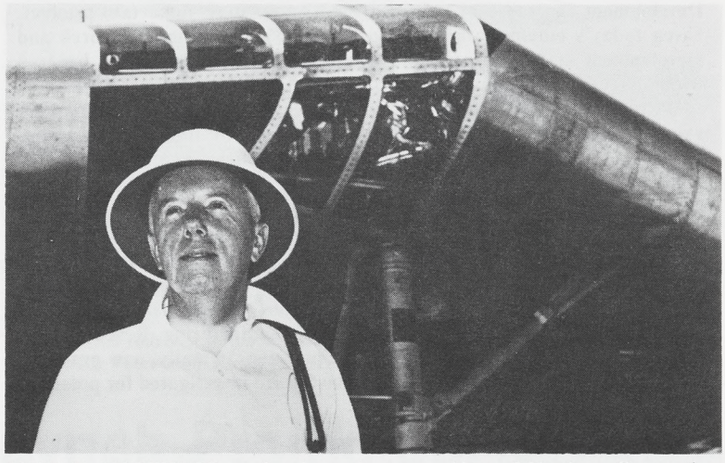
Northrop, a native of Newark, N.J., joined in forming Northrop Corporation in 1939 and served as president and head of engineering and research as well. He retired from the company in 1952 and has since been a consultant for a number of organizations.

He perfected the all-metal aircraft and designed the Northrop Alpha, Beta, Gamma, and Delta planes which pioneered smooth stressed skin metal construction in a commercial airplane.

As head of engineering at Northrop, he was responsible for the design of seaplanes used by the Norwegian government in exile in World War II, the famous Flying Wing bombers of which several models were built, leading up to the XB-35 which evolved into the jet-powered YB-49, the P-61 Black Widow, first plane built for night fighting and first to have radar-controlled guns, the F-89 Scorpion all-weather interceptors, and the SM-62 Snark, America's first intercontinental guided missile.

The other pioneers honored were: Major General Leigh Wade, USAF (Ret.), who made history with the first Round-the-World Flight in 1924; Cyrus Smith, long-time president of American Airlines; T. Claude Ryan, who designed and built monoplanes dating from 1925 of which the most famous was "The Spirit of St. Louis"; and Clarence L. "Kelly" Johnson, probably the U.S. aerospace industry's most distinguished aircraft designer, is to retire from Lockheed this month. His credits go back to the Hudson bomber, the P-38 Lightning, and most recently the SR-71, which set transatlantic speed records in 1974.

The five men honored joined 53 aviation pioneers who have already been enshrined in the Aviation Hall of Fame, beginning in 1962.



JOHN K. NORTHROP, co-founder and past president of Northrop Corporation, standing in front of the Northrop YB-49 Flying Wing of which several models were built.

Implementation of New Centrex Communication System Is Underway

The Centrex implementation task force at the Aircraft Division has announced work is already underway in converting the Northrop telephone network to the Centrex communication system.

The new system allows direct inward dialing to offices and departments without going through the switchboard, results in more efficient handling of calls because of the individual intra-company dialing capability, and requires fewer attendant positions.

In some locations within the company, equipment has been ordered and is being installed, while necessary changes are being made to existing equipment.

Preparations are being made to issue directories listing the new Centrex telephone numbers. Special postcards will be distributed to all employees soon. The postcards will be used by station users to inform frequent callers of their Centrex number.

Posters will be placed in lobbies and on bulletin boards as reminders of the Centrex service which is scheduled to start in June.

Credit Union Offers Many Additional Services

The Northrop Credit Union board of directors at Hawthorne has announced the following innovations to Credit Union members for the coming year:

• Application to the National Credit Union Administration for Federal Share Insurance for members' share accounts. When approval is granted by NCUA, each member account will be insured up to a maximum of $40,000, according to the provisions of the coverage.

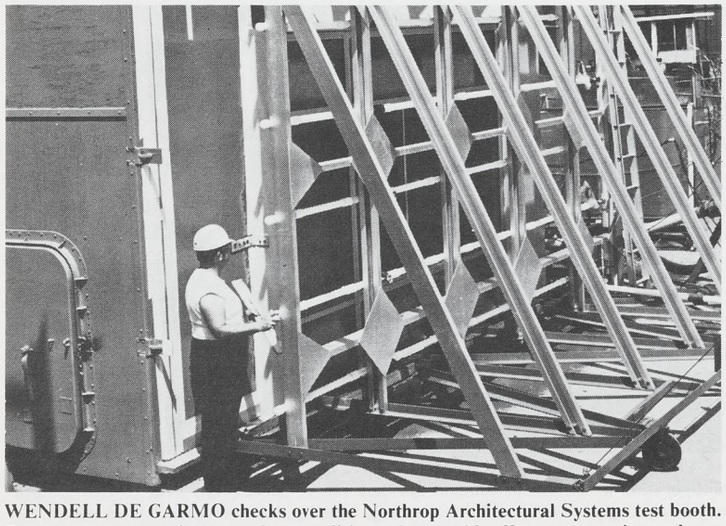
• Introduction of the new Norcredit VIP account privileges. This procedure puts instant money as close as your telephone. Norcredit VIP is pre-approved up to $2500 on an unsecured basis and up to $5000 on a secured basis based upon seniority, credit rating and ability to pay.

• Completed arrangements to offer group automobile insurance through the Firemen's Fund Insurance Company and Laven Insurance, Inc., beginning Mar. 1. Known as "Autoway", this program will be available to all members who hold a valid California drivers license and will provide broad family automobile insurance at reduced cost for most eligible members.

• The annual Northrop Credit Union shareholders meeting will be held in the Plant One cafeteria on Tuesday, Feb. 4 at 5 p.m. for election of directors, credit committee members, supervisory committee members for the ensuing year, and transact such other business as may come before the meeting. Shareholders of record on the books at the close of business Feb. 4 will be entitled to vote at the meeting.

• Installation of two additional telephone lines for incoming calls from outside the Northrop switchboard. Numbers are: (213) 675-7133 or (213) 675-7134.

Credit Union members desiring further information on the above-mentioned items should contact the Credit Union, Aircraft Division ext. 1117.



WENDELL DE GARMO checks over the Northrop Architectural Systems test booth. Booth simulates various weather conditions that could affect company's products.

Local NSA Chapters To Present Seminar

Four local chapters of the National Secretaries Association (International) will present their sixth annual education seminar and workshop at the Los Angeles Airport Marina Hotel on Feb. 1.

The workshop, entitled "Contact: The First Four Minutes", will be directed by Leonard M. Zunin, M.D., psychiatrist and founder/director of the Human Relations Consultants Organization.

Price for the workshop is $10 for NSA members; $12.50 for non-members and guests; and $7.50 for full-time students. This includes continental breakfast and luncheon.

Further information may be obtained from Joyce Carver, seminar chairman, Century City ext. 334.

Christmas Gift Program Tops Last Year's Efforts

The annual Christmas Gift Program is now just a memory in the minds of those who made it all possible, but this memory remains vividly in the minds and hearts of others.

This year, this dedicated Northrop group raised over $75,000 in cash and gifts to assist 103 area families and 26 local community programs, such as hospitals and charitable institutions. Money, clothing, food, help with medical bills, and other necessities were among the things donated.

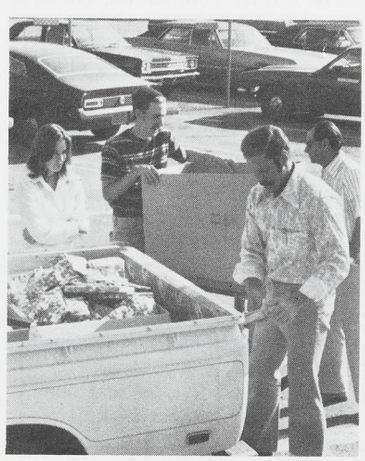
Letters acknowledging the generosity and kindness of Northrop people have been received from many sources. They spell out just how much these gifts meant to those who received them.

Marie Tully, who was steering committee chairman and coordinated the total program, wishes to express a special thanks to the committee and all those who worked many hours to make the program a success.

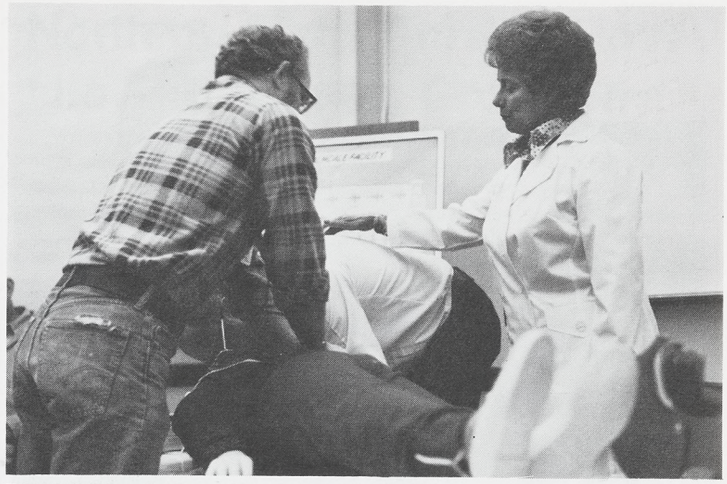
The committee for 1974 at the Aircraft Division consisted of Pat Anderson, Maybelle Blair, Rudy Charles, Sandy Cox, Mildred Davis, Scott Egan, Bill Hayman, Guy Kirby, Polly Middleton, Ivy Pocock, Doris Robinson, Sam Vernola, Pat Andren and Vito Ripa. For the corporate offices, Rhonda Allen.

The program is strictly voluntary, only for those who wish to take part. It provides a means for each individual to give or help as he or she sees fit to help the needy.

BETTY MAINE digs into bag full of entries held by Dennis Browning during the Mariposa facility's drawing for prizes which culminated a highly successful fund-raising drive during the annual Christmas Gift Program. Grand prizes were two rides in the Goodyear Blimp, courtesy of the Goodyear Tire and Rubber Company. Ride winners were Sid Kanner, Purchasing, and Bill Hudson, a vendor from outside the company.



ANOTHER GROUP from Mariposa chose the Southwest Foster Parents Association as their Needy Family project. Some of the workers, standing, are Barbara Perry, Jo Ann Mayo, Ruth Smith and Virginia Piraro, chairman. Front row, Tina Ochoa, Jeanne Loofbourrow and Ann Davis. Loading gifts, at right, for delivery to the association are Terry Duncan, Dave Stouff, Joe Rollins and Vic Fowler.



TRYING TO revive Resusci-Anne during Cardio Pulmonary Resuscitation training are Flavius Trousdal, standing, and Jim Lauder, volunteer fire brigade members at Palmdale facility. Keeping a watchful eye on them is Elinor Eckels, medical nurse.

Aircraft Division Fire Brigade Volunteers Complete Training

Volunteer fire brigade members throughout the Southern California operations of the Aircraft Division have just completed the standard multi-media Red Cross first aid course followed by Cardio Pulmonary Resuscitation (CPR) first aid training, according to Elinor Eckels, medical nurse.

With the assistance of Wayne Hardy, Fire Department instructor, Elinor visited each facility within the division and conducted the dual-session courses. Upon successful completion, attendees received the Red Cross first aid card and will receive certification in Cardio Pulmonary Resuscitation.

In addition to training films and lectures, the course consisted of actual demonstrations utilizing "Resusci-Anne", a life-sized dummy equipped with gauges to register the amount of pressure applied during heart massaging, and the amount of air forced into the lungs during mouth-to-mouth resuscitation.

The CPR training has now become a standard phase of first aid training given by the Northrop Fire Department and Medical Services, Hardy noted.

State California Health Departments Begin New Immunization Campaign

California health departments have begun a new campaign called the California Immunization Action.

California Immunization Action is a campaign to increase the percentage of children immunized against such diseases as polio, diphtheria and measles.

Dr. R. J. Krebsbach, corporate medical director, urges all employees to make sure their children are fully immunized against childhood diseases.

"According to information provided by the State Health Department," Dr. Krebsbach said, "the percentage of immunized children in California has dropped so low that widespread epidemics could occur."

The diseases for which children should be immunized, he continued, are polio, measles, rubella (German measles), diptheria, tetanus, pertussis (whooping cough).

"One of the main problems is that many parents wait until their children are approaching school age before having them immunized," he explained. "This leaves the child vulnerable to disease during his first four or five years of life. It is this age group that would be especially hard hit by epidemics."

Parents should check their records to make sure their children have been fully immunized and to take unimmunized children to their doctor or local health department without delay.

Man of LaMancha Tickets Available

The Long Beach Civic Light Opera is offering discount tickets for employees to see the performance of Man of LaMancha, a musical adaptation of a literary classic, as part of their 25th anniversary year. The production will begin Feb. 21 and play for four weekends.

HELEN WRIGHT, left, shows Susan Short how personality traits are revealed in one's signature. What did she find out about Susan? That she was very nice! What else?

Your Handwriting Reveals All Personality Characteristics

All your personality secrets are in your handwriting. This is because your brain does the writing. Your hand just holds the pencil.

So says Helen Wright, Northrop Architectural Systems, who is a graphologist — one who studies the science of handwriting.

"Graphology is not fortune telling," Mrs. Wright insisted. "It is based upon a study of the up-slants and down-slants of a person's handwriting.

These slants are like a cardiogram. Study of millions of these by graphologists through the years have shown definite personality characteristics."

Everything Means Something

Everything in your handwriting means something, Mrs. Wright said. "The way you cross your t's, make your periods, slant your letters or press on the pencil are indications of the type of person you really are."

As people mature their personality and values sometimes change as well. This shows up in comparison of early and later handwriting. These studies can show a person's compatibility, ambitions, anti-social tendencies and even the sex drive.

Emotions also show up in the handwriting. Mrs. Wright told of a graphologist who received a letter from his mother telling him how nice things were going for her. After reading the letter he jumped in his car and left immediately to see her. He could tell from her handwriting that she was under an intense emotional strain despite her reassuring words. He found her suffering from terminal cancer.

Another woman sent her husband's handwriting to a graphologist. After receiving the report, she read it carefully and said, "That verifies my opinion of him. I'll go ahead with the divorce!"

In other fields, graphology is proving of value in determining why some children don't learn and in working out compatibility problems.

Mrs. Wright took a course in graphology several years ago and has been practicing the science ever since. "I need at least 100 up and down strokes to make a study," she said. "A brief report takes me a minimum of three hours and I may work a full week on a more detailed report. It takes so much time that I have to turn down many people who ask me to analyze their handwriting.

"What you find out depends upon the person," she added. "Some people's handwriting is very interesting. Others are blah. And some — well, you're embarrassed to tell them what their writing says about them."

So if you want to know more about yourself and what your personality traits are, go see a graphologist.

It Keeps Life From Getting Dull, EMD Skydiver Claims

Piloting a plane became dull after 25 years, so Roy Compton, development machinist, Electro-Mechanical Division, has taken up flying without the plane. At the age of 51, he has become a skydiver and parachutist.

"The routine of life gets dull," he said in explaining his new hobby. "When this happens I like to find something that puts the thrill back into living. And of all the things I have done from piloting a plane to motorcycle racing, parachuting is the best of all. When you jump out into space there is a feeling of freedom that you don't get any other way."

In preparation for his first jump, Roy took a one-day course at the Para-Center in Elsinore. "Mainly we were taught how to land — that is to keep our feet together and bend our knees to take up the shock. Broken bones are usually caused by landing on one leg so that it has to take all the shock."

Making the actual jump is no problem, Roy said, "The plane was adapted for jumping. There is a small foot stand outside the door. You stand on this and hang on to the wing strut until the jumpmaster tells you to let go. Then you just float down."

ROY COMPTON hits the silk after taking up skydiving at age 51.

NRC Radio Club Resumes Classes

The NRC Radio Club will resume its amateur radio license examination preparation classes Feb. 5, in the NRC Clubhouse, Hawthorne, beginning at 7:30 p.m., according to Ben Russell, W6NYB, course instructor.

"Citizen band operators should consider amateur radio as a way to have personal radio communications with high power output that does not violate any FCC rules and regulations," Russell said.

Classes will include radio regulations, elementary theory, and the international Morse code, and are open to all Northrop employees and their families.

For further information, contact Russell on ext. 1715, Aircraft, or Personnel Activities, ext. 2486.

Snark Reunion

Jack Cushman, chairman of the Snark Titan II reunion, has announced the reunion will take place Saturday, Feb. 22. Location is the Holiday Inn in Torrance.

Cocktails are from 7 to 8:30 p.m., dinner at 8:30 and dancing after dinner.

All those interested in attending, please contact Jack, Aircraft Division ext. 2574.

Get up a group and come to the party and meet all your old friends who worked on the Snark Titan II.

Retiree Writes Book on Life of His Grandfather

People retiring from Northrop have many interests. Some travel, some do gardening, some work at their hobbies, and some even write books.

H. K. (Ken) Davidson, formerly with Aircraft Division Value Engineering, has finished a book in which he spent over seven years of extensive research.

The book, "Black Jack Davidson, A Cavalry Commander on the Western Frontier", tells the life of General John W. Davidson in his long and varied service in the military seeking to mold the ideal mounted unit, in the Southwest, the Civil War, on the plains of Texas and Oklahoma, and in the Big Horn country of Montana.

Davidson, the grandson of Black Jack, served actively in the U.S. Navy from 1919 to 1951, retiring with the rank of captain.

Golf Tournament

The Northrop Golf Club has scheduled a golf tournament for Saturday, Feb. 15 at Soule Park Golf Course in Ojai.

Signup deadline is Monday, Jan. 27 at Aircraft Division Personnel Activities.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Pontiac, 1966 Grand Prix, air, full power, belted tires, $500. 213-377-7317.

Motorcycle, 1970 Harley Davidson Sportster, $1700. 213-375-7303.

Monte Carlo, 1973, $3695. 805-259-7899.

Motorcycle, 1969 Yamaha, 250 c.c., dirt, exp. chamber, nickel plated frame, chrome, $450. 714-826-9468.

Stake Truck, 1964 Chev. 2-ton, 283 eng., C-50, $2500. 213-396-1504, 213-641-9936.

Ford, 1970 van, E100, stick shift, paneled, $1850. 213-675-6331.

Motorhome, 25' 1972 Launau, a/c, Onan generator, awning & side curtains, sleeps 6, fully self-contained, $12,500. 714-558-0967.

Pinto, 1971 Runabout, will consider trade for older car as part pymt., $1595. 714-956-7838.

Motorcycle, Honda 90, 1967, approx. 3000 mi., trail gear, $150. 213-860-2948.

Motorcycle, 1969 Harley Sprint, Parnelli tires, $350. 213-838-2793.

Motorcycle, Yamaha RD250A, 210 mi., $850. 213-644-3376.

Volvo, 1974 wagon, manual trans., fact. air, AM/FM stereo, lug. rack, $5300. 714-552-1318.

Capri, 1974, V-6 eng., 4-spd., AM/FM/8trk., 7000 mi., many extras, $3700. 213-645-7715.

Mercedes 250-C, 1972, 49,000 mi., $6000. 213-377-3858.

Pontiac, 1965 Catalina station wagon, $425. 213-541-1568.

Ford, 1970 Maverick, a/c, auto., $1595. 213-860-8746.

Ford, Gran Torino Sport, 22,000 mi., $2500. 213-371-6618.

Pickup, 1965 Ford, ½-ton, w/camper shell, many extras, $1399. 213-323-3801.

Motorcycles, 1974 Honda CR-125 Elsinor, $700; 1974 Suzuki TM-125, $625. 213-834-5748, 213-549-2579.

Volkswagen, 1971 bus, reblt. eng., radial tires, mag whls., $2300. 213-376-3319.

Pickup, 1973 Datsun, camper shell, AM/FM stereo tape, 25,000 mi., $3300; motorcycle, 1972 Yamaha 360, eng. reblt., $450. 213-634-0053.

Karmann Ghia, 1972, 25,000 mi., $2500. 213-372-6618.

Motorcycle, 1970 Honda 350, $650. 213-421-0900.

Cadillac, 1974, fully equipped, 12,000 mi., $6800. 213-370-7861.

Motorcycle, 1973 CZ 250, new top & bottom end & chain, many extras, $700. 213-676-4686.

Volkswagen, 1965 1200, $775. 213-378-3809.

Motorcycle, 1973 Yamaha 360 MX, ridden 5 times, $800. 213-641-0326.

Datsun, 1972 1200, 4-spd., tapedeck, 30,000 mi., $1800. 213-370-2325.

Motorcycle, 1974 Bultaco, Astro 360cc, all extras, $800. 213-320-4034.

Motorcycle, 1974 125 Yamaha MX, plastic tank, modified pipe, Honda shocks, $600. 213-372-4659.

Miscellaneous For Sale

Sailboat, 24' Bayliner Buccaneer, new in July, completely equipped, $9000. 213-378-7846.

Trapeze Bar, free standing, adult size, for invalid use, $75. 213-322-2332.

Ski Boots, men's size 11 Raichle, $35. 213-545-3455.

Boat, 1960 17' Boulder Craft, fiberglass, Runabout, w/45 h.p. McCulloch outbd., access. & trailer, $695. 213-371-4976.

Furnace, forced air, day & night input 100,000 b.t.u., bonnet cap. 80,000 b.t.u., thermostat, $150. 213-860-9083.

Engine, Pontiac 389, reblt., never been run, $300. 714-774-2779.

Miscellaneous For Sale

Surfboard, Weber DNT series, adjust. skag, 9' 6" x 21", used twice, $85; wet suit top, med. lge., $25 or $100 both. 213-644-6433.

Organ, Thomas w/rhythm section, walnut, $500. 213-370-9119.

Desert Air Lamp, $15. 213-675-6020.

Shampoo Bowls, 3 beauty shop-type, $15 ea. 213-834-3290.

Organ, 1972 Hammond, model H182 w/rhythm-ace, Italian provincial cabinet, $3300. 714-639-6745.

Carpet, simulated Persian, 9x12, gold, tabritz design, nearly new, $75. 213-874-5161.

Bicycle, boy's 3-spd. Roddy, $30. 213-328-7534.

Pool Table, Bandy Big 6, won on TV game show, $1000. 213-675-6309.

Bicycle, Huffy Super 10 26" derailluer, used 2 wks., $65. 213-673-0678.

Bed, new Waterworks, king size, complete w/Bassett bdrm. grouping, $500. 714-531-0888.

Sofa, Early American, $150. 213-821-8150.

Pool Table, 4x8, cue sticks & balls, $45; trunk, lg. antique, flat top, $40; TV, 21" RCA color, $40. 213-325-7806.

Boat, 17' Boston Whaler, trailer, 4 cy. outbd. motor, bait tank, $2000. 213-973-5434.

Sailboat, 12', trailer, all equip., $300. 213-376-7510.

Dining Room Set, mahogany, $100; vanity, maple, $35. 213-295-9997.

Watches, his/hers Lucien Piccard, $75 ea. 213-376-2127.

Golf Clubs, women's, Wilson starter set, bag incl., $60. 213-679-7321.

Jukebox, Kenner Toy, extra drums, $10; floor pillow, lge., matching throw pillows, $15. 213-530-3521.

Feeding Table, baby's, whl. & hgt. adjust., 9 mos. old, $35; play pen, net siding, collapsible, $13.50. 213-644-7696.

Piano Lessons, 20, $20, metronome, $8; typewriter, Remington elec., $95. 213-676-3050.

Desk, full size, steel, matching chair, $50. 213-371-9823.

Phone Answering Machine, auto., still in carton, $100. 213-884-4545.

Tire, H78-14, 50% tread left, $5. 213-323-3528.

Pups, German shepherd, AKC reg., 10 wks. old, $75 ea. 714-993-1969.

Chair & matching ottoman, gold leather & teak wood, $95; sofa, 10', floral print, $75. 213-973-1301.

Dining Room Set, modern, walnut, 6 chairs, $150. 213-532-7846.

Swing Set, hvy. duty, $25. 213-549-2798.

Banjo, 5-string, case, picks & music, $80. 213-377-9444.

Revolver, Colt Trooper, 6" bbl., shoots .357 mag & .38 spl. cartridges, $160. 213-823-8675.

Figure Skates, SP Teri girl's, pro boot size 3, never broken in, $45; SP Teri men's, 2-star blade, size 10½ m., $35. 714-828-9243.

Skis, Lange short, Solomon 444 bindings, $130; boots, women's Caber size 7½-8, $50; warm-up pants, men's med. short, $10, never used. 213-675-5675.

Yacht Rope, nylon twist, ½", about 228 feet, 10¢ ft. 213-545-7952.

Hospital Bed, near new, 3 controls, $125. 714-879-1325.

Wheels & tires, 2 14", fit Ford, Dodge, AMC, $20. 213-378-1026.

Barbecue, incl. 30 lbs. of charcoal, $5. 213-675-8813.

Skis, Head, $50; ski boots, size 7, $25; ski rack, fits Porsche, $10. 213-645-9836.

Copier, 3M Thermofax, table top, used little, $95. 714-524-1531.

Stereophonic Set, 6' cabinet with Kenmore amplifier & Sony tape deck, $50. 213-530-1124.

Bathroom Sink, used, w/faucets, $10. 213-379-4517.

Cemetery Lots, 4, Riverside Crestlawn, Eternal Hill, $484 - $2400; first trust deeds, $18,000. 714-364-2488.

Wanted To Buy

Hardtop for Sunbeam, 1965 to '67. 213-372-6305.

Wheelchair, lightweight. 714-897-2007.

Toolbox, lge. & rollaway. 213-329-7998.

Gifts, handmade. 213-379-7488.

Pickup, 1970 or '71 Datsun or Toyota. 213-860-8746.

Northrop Plans Provide Good Life for Retirees, Gross Says

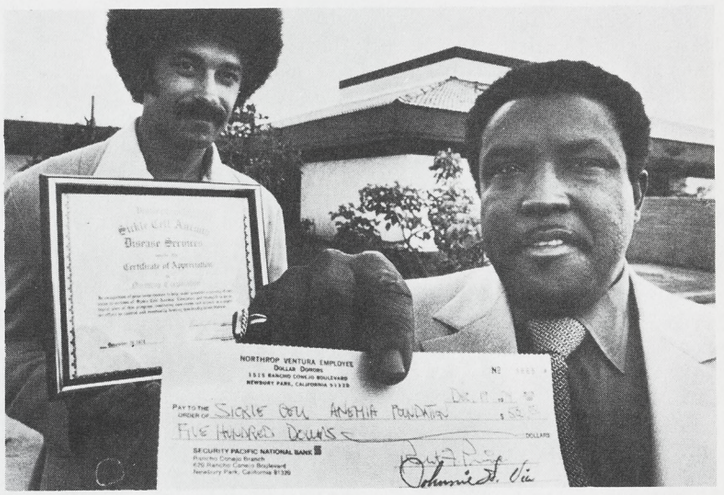
What the Northrop Retirement and Savings Plans really mean to a retiree was graphically presented by C. L. Gross in a letter to the Northrop News. Gross retired from the Electro-Mechanical Division in January 1970.

"I retired at 57 to a life of gardening and travel," Gross wrote. "Words cannot describe the beautiful life my wife and I have lived since retirement. It was made possible only by the Northrop Retirement Plan and the Northrop Employees Savings Plan.

"I began drawing Social Security only last June — so even with inflation our income is adequate. Hats off to Northrop — 'a good place to work.' "

Gross also had good things to say about the Northrop Group Insurance Plan.

"I retained my Group Insurance, having a small amount deducted from my retirement check to pay the premium," he said. "It paid off since both my wife and I have been hospitalized with the standard ailments for senior citizens. Bills ran to about $3500, but our rapid recovery was due in part to the fact that only about $300 of this came out of our pockets. That's good insurance!"



DOLLAR DONOR check for $500 from Ventura Division employees, is held by Northrop's William H. Zachery, foreground, prior to presentation to Russell Walker of Ventura County Sickle Cell Disease Services. Walker is shown holding certificate.

Wanted To Buy

Piano, for beginner. 714-956-7838.

Boat Trailer, for 13' sailboat. 213-671-0835.

Tent, Coleman 9' x 12' or larger. 714-536-8068.

Books, hardback copies of any James Michner, reasonable. 213-370-0435.

Rolling Stock, N scale, & equipment. 714-828-9243.

Lugged Frame, 27" wheel, 10-spd. bike, good condition. 213-457-7086.

For Sale or Trade

Camera, Yashica Electro 35G, $65; Synchronex Mark IV movie, zoom lens w/recorder for lip synchornized sound, $70; or trade for old, classic cameras for collection. 213-413-4642.

Lost

Gold Piece, 50 pesos, w/gold setting & chain, reward, ext. 4587.

Personals

Many thanks to all my friends for the prayers, cards, phone calls & visits during my recent illness. SKIP MARSTON.

Flash from Bishop, many, many thanks for the wonderful send-off & your friendship. Happy New Year. FRITZ McLARNEY.

I would like to express my sincere appreciation to all my friends at Northrop for their kindness & expressions of sympathy during the illness & loss of my father. VERLIN SEAMAN.

I want to thank my many Northrop friends for their cards, calls, & visits during my recent hospital confinement & recovery period. JOHN D. MORGAN.

Our heartfelt thanks for the flowers, cards & other expressions of sympathy at the loss of our mother, Mrs. Anna Dyar. JIM & MILDRED DYAR.

My sincere thanks to all my friends for your thoughtfulness at the recent loss of my mother. KENNY HAZELDON.

Free

Dog, toy shepherd, 3 yrs. old, all shots & spayed. 213-532-9142.

Dog, female mixed terrier about 8 mos. old. 213-675-5920.

Pups, Weimaraner/Great Dane, 3 males, 4 females black/white/gray. 213-322-7509.

Ride Wanted

Ride Wanted from Rollingwood tract to Palos Verdes facility, 8 a.m. - 5 p.m., will pay expenses. 213-378-3845.

Want to organize carpool from Silverlake & Los Feliz area, 8 a.m.-4:42 p.m., Electronics Hawthorne ext. 275, 213-661-8361.

NORTHROP NEWS

Vol. 33 **No. 1**

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Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft Division; Jim Ramsey, Electronics Division; Park Irvine, Ventura Division; Chuck Campbell, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

BILL THOMAS spent a part of his summer vacation as scoutmaster.

FOR SCOUT SERVICE

Long Beach Honors Thomas

Bill Thomas, test inspector, Hawthorne facility, has been honored by the Long Beach Council of the Boy Scouts of America in a letter of appreciation recognizing his service to the scouts as an adult leader.

Thomas spent a week during the summer as scoutmaster for Lakewood Troop 235 on an outing to Camp Tahquitz - Barton Flats, in the San Gorgonio Mountain Range.

A leader for the past nine years, Thomas first got into scouting at age nine and through the years achieved the rank of Star Scout.

The letter of appreciation from the Long Beach Council called special attention to the fact that if it weren't for volunteers like Thomas, who give part of their summer vacations each year, thousands of scouts would be unable to attend camp.

Formulation of Two Additional COM-BUS Routes Underway

A new COM-BUS route has been established for Northrop personnel working the 7:30 a.m. to 4:12 p.m. work shift and living in northern Orange County, according to Dick Parrish, bus captain for the route.

The route currently originates at Lemon and Freeway 91 with a stop at Knott Avenue and Freeway 91. An additional stop is on the agenda at Pioneer and Freeway 91, if enough employees are interested.

Seat availabilities will be made on a first come, first served basis. Reservation fees are $11.50 a week.

For reservations or further information, contact Parrish on Aircraft Division ext. 5031, or (714) 827-7081.

A second COM-BUS route is being formed for employees living in southern Orange County.

This route will accommodate people working the 7 a.m. to 3:42 p.m. or 7:30 a.m. to 4:12 p.m. work shifts and could start as far south as Mission Viejo. Reservation fees range from $14 to $11.50 a week.

Contact R. R. Dudley, bus captain, Aircraft Division ext. 4741 or (714) 962-1805.

Ski Club Plans Trip

The Northrop Ski Club will sponsor a trip to June Mountain the weekend of Jan. 24.

Forty reservations are available at $38 per person for members and $45 per person for non-members. This includes bus fare, two nights lodging at The Heidelberg, refreshments on the bus, and shuttle services to and from the lifts. The bus will leave at 6:30 p.m. from Aircraft Division Gate 5.

A Ski Club meeting is scheduled for Jan. 30 at Lococos to plan another trip in February.

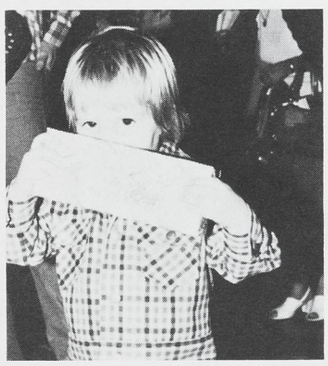
SERVICE AWARDS

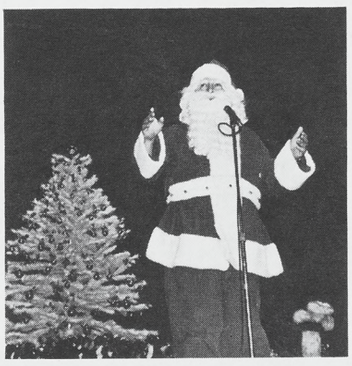
Clement Huhnke, Electronics Division Hawthorne, heads the list of service awards. He will celebrate his 25th year with Northrop on Jan. 26.

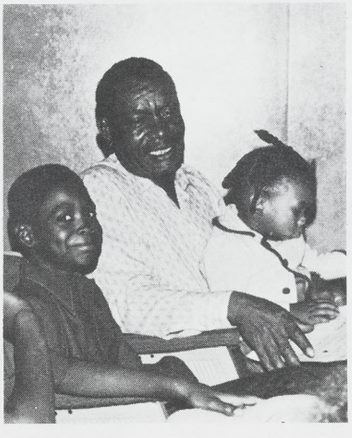
Others eligible for service awards are: 20 years — Donald Chaney and Betty Compton of Hawthorne;

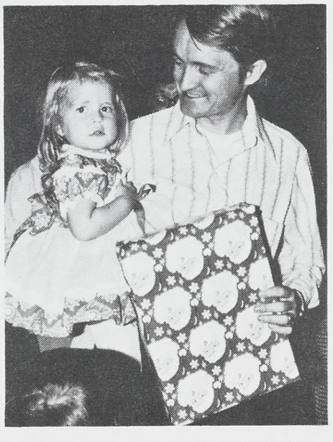
15 years — Philip Fox and Henry Muise, Hawthorne; James Donahue, Palos Verdes; 10 years — Donald Murray and Stanley Apo, Hawthorne.

Thirty-Fourth Annual Children's Christmas Party









NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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F-4B Testing Proves Omega Performance

Testing by the Naval Air Systems Command of the Avionics Department's AN/ARN-99 (V)-2 Omega navigation system aboard an F-4B at supersonic speeds and during tactical air maneuvers has been completed with excellent results.

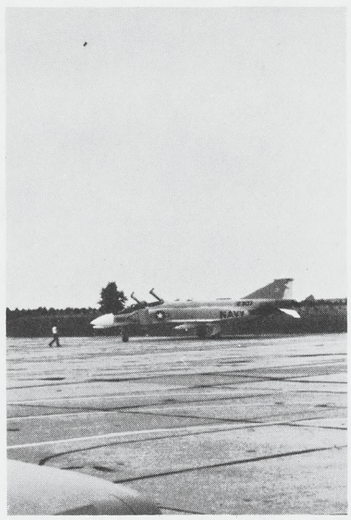
According to a report issued by the Patuxent River, Md., Naval Air Test Center, where the tests began last September, "position determination by the Omega system has been highly accurate and enhances the accomplishment of navigation in a high performance tactical airplane."

The Navy had conducted the feasibility study under a contract sponsored by NASC to determine the system's suitability for possible use in A-4M and AV-8A aircraft, as well as in the Navy F-4s.

Performance of the Omega navigation system was evaluated during air to ground, high speed, supersonic and air combat maneuvers. The system navigated within the specified one mile accuracy undergoing these tactical conditions.

A First for Omega System

According to Bob Sanders, project manager, the tests marked the first time any Omega system has been tested in a fighter aircraft and at supersonic speeds. "We didn't know if there would be signal loss at supersonic speeds or a loss of tracking during air combat maneuvers. The system worked better than even we anticipated," Sanders said.



NAVY F-4B returns from test hop at Patuxent River, Md., Naval Air Test Center. Maj. W. T. Bridgham, USMC, was navigation flight officer for the test project, and J. Tharp was the Naval Air Air Test Center engineer.

Highly accurate position information was consistently computed and displayed by the system, the Naval Air Test Center report stated, and the conclusion was: "Within the scope of the tests conducted to date, Omega navigation offers the potential to better accomplish the navigation mission in a high performance tactical airplane."

Key Northrop personnel involved in the tests were Project Engineer Ray Latchford and Analyst Ed Smith. The Navy may now plan to test the system during carrier operations, Sanders said, and there is a possibility of combining it with an AHRS (attitude and heading reference system), he added.

Flight Tests of Omega Systems Completed

The U.S. Air Force flight evaluation of six competing Omega systems, including the Electronics Division's Cardinal I automatic receiver, has concluded with flight tests at Eglin AFB, Fla.

The tests, using a KC-135 aircraft, began in early November. According to J.R. Durey, director, marketing field operations (Dayton), Northrop's system was impressive, and performed very well during thunderstorm conditions encountered.

The flight evaluation by the Air Force was designed to collect Omega data from six different manufacturers. An RFP is expected to be issued later this month, with two or three vendors selected to provide systems for further testing.

Eventually, selection by the Air Force for a production contract could involve 1000 units for airlift type aircraft.

(Note: A current report on the Air Force Omega program appeared in the Feb. 6 issue of ***Electronics*** *magazine.)*

Division Wins Contract In MX Computer Phase

The Electronics Division has been awarded a $3.4 million contract from USAF's Space and Missile Systems Organization (SAMSO) for development of advanced computer technology for the Air Force's Advanced ICBM Technology Program (MX).

The contract, covering a two-year period, calls for development of critical LSI (large scale integration) components for the MX missile's guidance system computer. Northrop will be responsible for defining the computer system — including processor logic, computer instructions, memory system and interface with missile subsystems.

Work will be conducted by Northrop Research and Technology Center as well as by the Electronics Division at Hawthorne and Palos Verdes. Under subcontract to Northrop, Westinghouse will develop and supply memory and processor circuits.

According to David N. Ferguson, corporate vice president and general manager, Electronics Division, "This contract represents an important achievement for the division in securing a key role in the initial development of the MX guidance system. Successful execution of this contract will lead to further involvement in this highly important national defense project."

Northrop has been active for more than 10 years in development of radiation-hardened electronics. Experience in missile guidance technology has included Skybolt, advanced reentry computers, reentry sensors, and extensive radiation test programs.

The MX program, according to SAMSO, is structured to provide a technology base for making development decisions for the next generation missile. Concepts and technology being considered include silo basing, as well as ground and air mobile methods.

Bloodmobile Visit Set for March 13

The first blood drive of 1975 will be held Thursday, Mar. 13, 9 a.m. to 1:30 p.m. at the Hawthorne facility, according to Arnah Pakes, Medical.

"There will be four bloodmobile visits during 1975 and we are hopeful of good participation in all of them," Arnah said.

Blood donor cards will be distributed with paychecks Feb. 28. Personnel at Palos Verdes who send in their cards will receive appointment times.

ELECTRONICS DIVISION TEAM, instrumental in the MX proposal and program plan, will be responsible for the program's performance. They are, left to right: T.C. Jackson, chief of Engineering; Herb Stark, program manager; Dr. W. L. Parker, manager, Strategic Missile and Space Systems Dept., and George Schenck, Computer Design. Team member Boyce Ahlport, Parts Technology, is not in photo.

Northrop Reports Higher Sales, Earnings for 1974

Northrop's 1974 sales were the highest in the company's history while earnings per share reached their highest level since 1955.

In announcing the record results for 1974, Thomas V. Jones, chairman and president, said the company expects sales in the future to be "somewhat higher" than last year, and that he also expects the improved earnings trend that began in 1972 to continue.

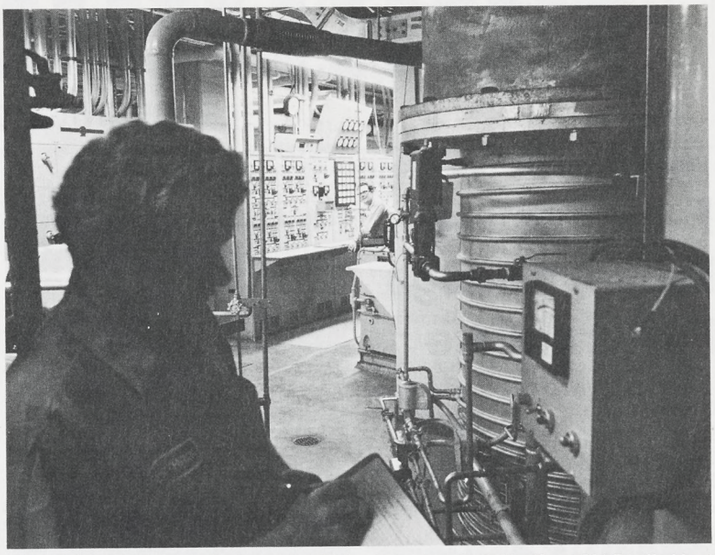
Northrop's 1974 sales rose to $853.3 million, an increase of 22% over the $699 million recorded in 1973. Net income for 1974 totaled $18.1 million, an increase of 56% over the $11.6 million reported for 1973. The company's backlog at yearend stood at $1,123,700,000 as compared with $1,165,500,000 at the end of 1973.

Primary earnings per share for 1974 amounted to $4.86, a 66% increase over the $2.93 reported for 1973.

The company's loss of the U.S. Air Force Air Combat Fighter program was a disappointment, Mr. Jones said, but "will not have any significant impact on the company's 1975 financial performance." He noted that a carrier-suitable variant of the company's F-17 fighter — proposed jointly by Northrop and McDonnell Douglas — is now under consideration by the U.S. Navy, which also has a requirement for an ACF. In addition, the company is discussing the Cobra, an overseas variant of the F-17, with a number of foreign nations that have a requirement for a versatile, low-cost tactical fighter for use in the 1980-2000 period.

Mr. Jones noted that all of the company's business areas — aircraft, electronics and communications, construction and services — were profitable in 1974, and that each had contributed to the company's overall increase in sales. This participation by each of the basic areas in the company's growth, he said, reflects the present business balance of the corporation.

"The company's primary lines of business provide opportunity for Northrop's future growth in volume, in efficiency and in profitability," he added. "The exploitation of our present position is the essential characteristic of our long range plans for the next five and 10 years."

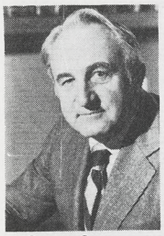


THE LARGE SOLAR Environmental Simulator, nominal 40x60, at NASA-Goddard Space Flight Center is operated and maintained by Northrop Services, Inc. The simulator enables technicians to simulate the effect of the sun upon materials and equipment to be used in deep space. Operator in foreground is monitoring performance of facility vacuum pumping system. In background is the main vacuum system control console.

George Gore Retires; Legal Staff Announces Appointments

George Gore, vice president and general counsel and secretary of Northrop Corporation, has retired after nearly 34½ years with the company.

When Gore joined Northrop in 1940 the company was working on its first airplane contract, the N-3PB for the Norwegian government. The number of employees was less than 2000 and in 1941 the company's backlog was about $74 million. Today, Gore has seen the number of employees increase to about 24,000 and the backlog grow to over $1 billion.



George Gore

In announcing Gore's retirement, Thomas V. Jones, Northrop's president and chairman of the board, said, "I know I speak for everyone at Northrop in thanking Mr. Gore for his outstanding service to the company and in wishing him every success and happiness in the years to come."

Robert B. Watts, Jr., associate general counsel since 1972, has been appointed acting general counsel, according to an announcement by Mr. Jones. Watts joined Northrop as Nortronics Division counsel in 1964. He became corporate assistant general counsel in 1967 and associate general counsel in 1972. A graduate of Stanford Law School, he was counsel for General Dynamics in San Diego.

Frank F. Forve was named corporate assistant general counsel. Forve joined Northrop in 1950 as division counsel for the Aircraft Division. He was later counsel and corporate counsel for the Marquardt Corporation and corporate counsel for the Whittaker Corporation. He returned to Northrop in 1972 as general counsel for the Electro-Mechanical Division.

Lore A. Hawe succeeded Forve as general counsel for the Electro-Mechanical Division. Hawe was formerly deputy chief counsel for Douglas Aircraft Company, McDonnell Douglas Corporation. Previously he was on the legal staffs of the U.S. Atomic Energy Commission, Lockheed California Company and was staff counsel as assistant secretary of Genisco Technology Corporation.

Northrop Board of Directors Names Three New Members

Northrop Corporation has named three new members to the board of directors.

The new directors are Dr. William F. Ballhaus, president of Beckman Instruments, Inc., Fullerton; Thomas C. Barger, formerly president and chairman of Arabian American Oil Company; and Dr. O. Meredith Wilson, chairman of the board of the Federal Reserve Bank of San Francisco.

"These men were chosen from a large number of candidates suggested by many sources, because their diverse backgrounds and areas of specialization are partially suited to the expanding business activities of Northrop in this country and abroad," said Thomas V. Jones, chairman and president. "Their experience in technical, financial and international fields makes them especially well qualified to work with our management in the interests of all our shareholders."

Dr. Ballhaus, 56, prior to joining Beckman Instruments in 1965, was associated with Northrop for 12 years in the Aircraft Division and later as general manager of the former Nortronics Division. He served as executive vice president and as a director of Northrop from 1961 to 1964.

Mr. Barger, 66, was an executive of the Arabian American Oil Company (ARAMCO) for 32 years. For much of that time he lived in Saudi Arabia and is one of the United States' leading business experts on the Middle East, where Northrop has extensive activities. Mr. Barger, who now lives in La Jolla, Calif., has provided consultation services for Northrop in the past two years.

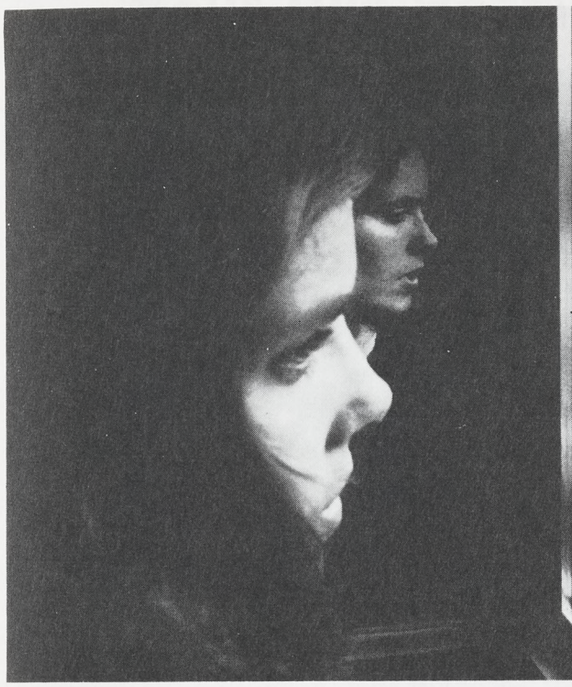
Dr. Wilson, 65, currently president of the Center for Advanced Studies in the Behavioral Sciences at Stanford, Calif., served in the past as president of the University of Oregon and the University of Minnesota. He has also served on a number of government commissions and advisory councils as well as on the board of several corporations and institutions.

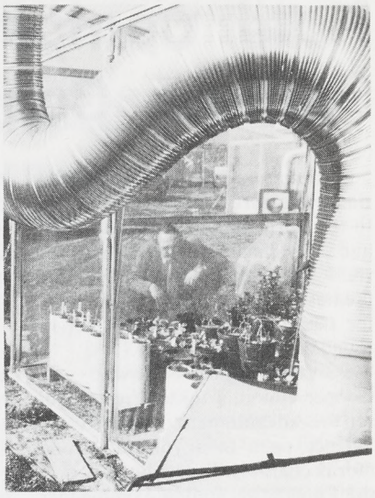
DIRECTORS DECLARE DIVIDEND

The board of directors declared a quarterly dividend of 40 cents per share on Northrop common stock, payable Mar. 22 to common stock of record Mar. 3.

This dividend action was the 95th consecutive quarterly payment by the company. The company twice increased its dividend payments in 1974 — from 25 cents to 28 cents in February and from 28 cents to 40 cents in August.

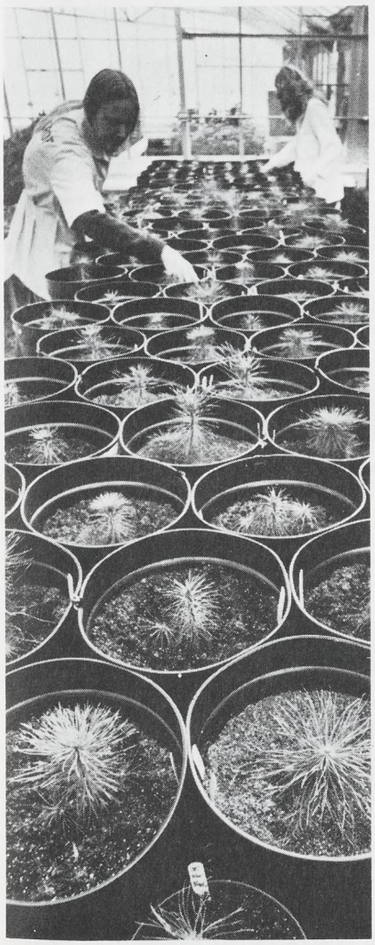
The board also declared a quarterly dividend of 36¼ cents per share on Northrop $1.45 cumulative preferred stock, payable Apr. 5 to preferred stock of record Mar. 20.





FIELD STUDIES permit carrying out stressant studies under normal environmental conditions, above. Tomato leaves, removed from plant after exposure to gaseous pollutants, incubate in flask, bottom. At left, technicians check on tomato plants.

Working to Save America's Plant Life



TECHNICIANS Lucia Bard and Diane Nedberge, care for ponderosa pine seedlings being grown for future studies. These plants will be subjected to various pollutants such as air oxidants and acid rain to determine the effect upon them.

A major world problem is not only what pollution is doing to us today, but what it will do to our world tomorrow. There is no definite answer yet, but the Environmental Protection Agency's National Ecological Research Laboratory, Corvallis, Ore., is seeking the answer through studies of the acute and chronic effect of pollutants on plant, animal and soil systems.

Northrop is aiding in this truly vital work through technical support to the laboratory by Northrop Services, Inc., whose technicians assist in the greenhouse and soil ecology areas. These research projects are providing data which scientists can use to predict the impact of pollutants on the entire ecosystem.

Northrop Services, Inc., assistance is under the direction of Nelson Pettit. William J. Oakes is manager of NSI and James M. Ricketts is NSI president. These photographs of NSI technicians at work were taken by Northrop photographer Robert T. Thornton.

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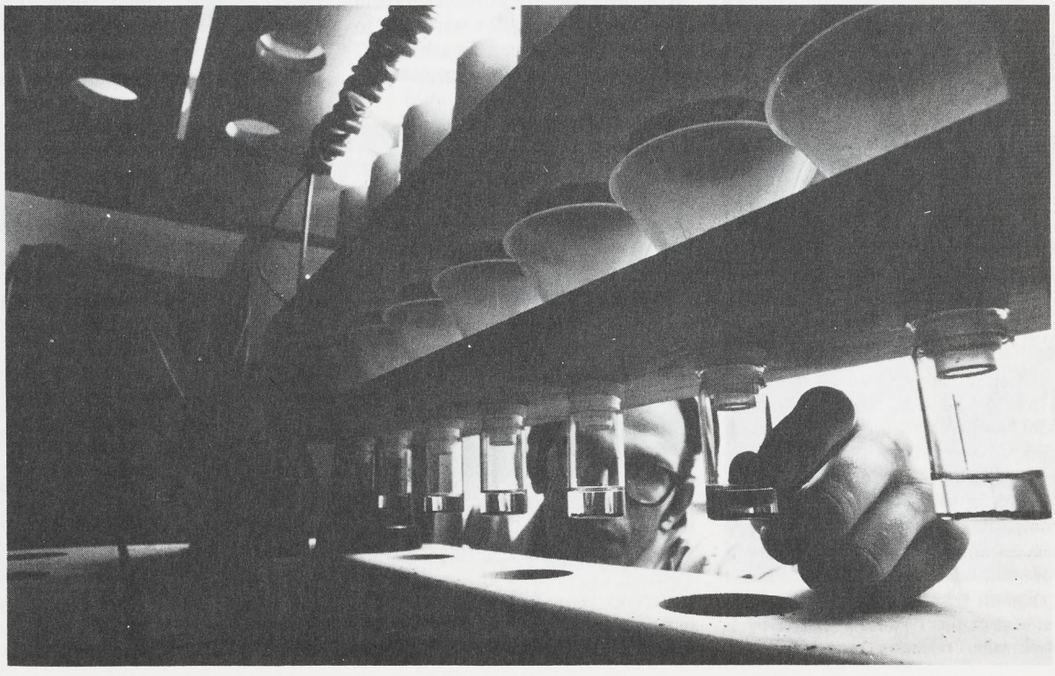
ARTHROPOD organisms in soil/litter samples are extracted by NSI technician Loren Russell. The lights above the canisters of soil samples provide a temperature-moisture gradient that causes the soil insects and organisms to migrate into the collection bottles.



Fuller Company Restores Famous Cooper Union

"I design to raise on this foundation a structure to be forever devoted to the cultivation and spread of just and necessary knowledge, until all shall know, from the least to the greatest, those things which make for their peace." — Peter Cooper, founder of Cooper Union.

Peter Cooper endowed the Cooper Union, a tuition-free school for the Advancement of the Art and Science open to anyone of "good moral character", and housed it in the Foundation Building on Cooper Square in New York City in the 1850s.

One hundred and fifteen years later the building had experienced a number of changes, including the addition of extra stories, a cylindrical elevator shaft that Cooper included (he was sure elevators would be round) had been given a rectangular cab, and visitors walked through a boiler room to get to the basement Great Hall, the setting of Lincoln's famous "Right is Might" speech.

New School

The School of Art and Architecture continued to occupy the Foundation Building, although a new building for the School of Engineering was erected in the early 1960s.

A decade later, the trustees of the school decided to renovate the Foundation Building and commissioned the head of the Architecture School and a Cooper Union engineering graduate, to do the job. The main reasons for renovation of the Foundation Building were to secure its aging structure, meet modern day fire regulations, improve circulation and to make the building as a whole more efficient.

Job Assignment

The George A. Fuller Company, a construction firm and a division of Northrop, located in New York, was assigned to do the restoration work. The south end of the building was gutted, and the exterior walls were temporarily braced from the outside. On the north end, two floors of bearing walls were removed to accommodate a library and exhibition space. The original framing above these walls was jacked up to remove the load while new structural steel columns were inserted. Then the old cast-iron columns on the upper floors were realigned. The building still rests on the original granite arches and cast-iron columns of the restored and upgraded Great Hall.

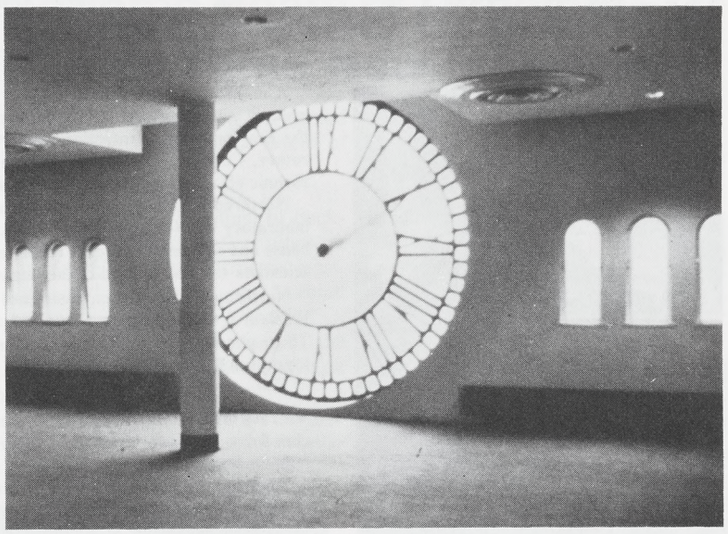
Cooper Union is now the best of both worlds. Its "Renaissance" shell is intact. The restoration took two years and for Fuller it was an "engineering spectacular," the New York Times said.

To the surprise of those who said it couldn't be done, the Great Hall was brought to a state of readiness for Cooper Union's 115th annual commencement on May 30, 1974.

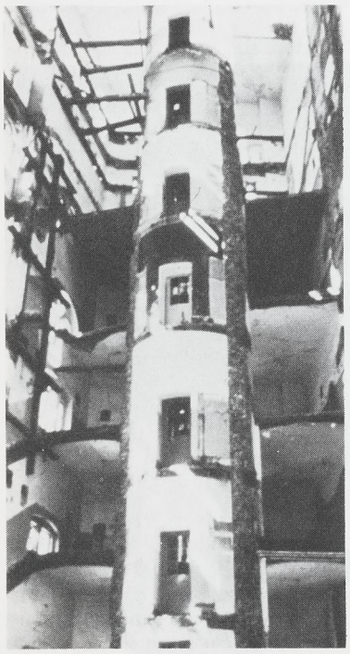
"We can take great pride in knowing we have the capability to rebuild and preserve historical sites such as this.

"It was a monumental task, but with precise craftsmanship and careful engineering, we were able to complete the building on schedule," said Robert Page, Fuller president.

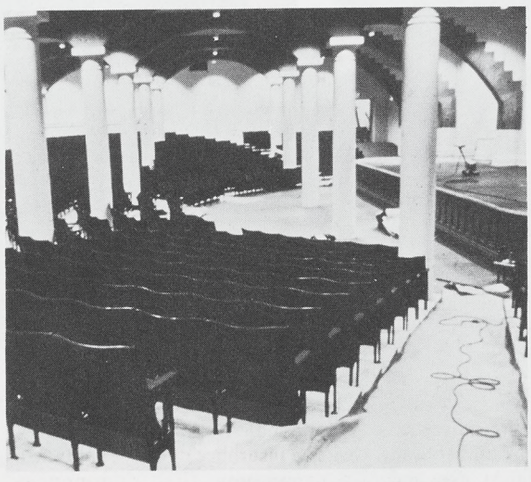
COOPER UNION renovation work by George Fuller Company, a division of Northrop, shows how exterior walls were temporarily braced from outside. The south end was gutted. On the north end two floors of bearing walls were removed.



THE GREAT STAINED glass face of the building's old clock on the top floor in the board of trustee room dominates an entire wall and can be seen in the street below.



COOPER'S PROPHETIC circular elevator shaft was restored with a stainless steel tube, replacing rectangular cab.



RESTORATION IS UNDERWAY in the Great Hall located in the basement where Lincoln made his famous 'Right is Might' speech. Visitors used to walk through a boiler room to get to it.

GEORGE A. FULLER Company completed rehabilitation of Cooper Union in two years. It is now a new building in an old shell as it stands in Cooper Square in New York City.

Your Two Hospital Medical Coverage Plans

Effective Nov. 1, 1974 Northrop has updated the Group Health Care Insurance coverage and established an all inclusive type of Major Medical Expense Insurance Plan that will provide protection for you and your family. In addition, the Maximum Amount of coverage for each individual has been increased to $250,000. The revised Plan will continue to be underwritten by The Prudential Insurance Company of America.

THE PRUDENTIAL GROUP INSURANCE HEALTH PLAN

This new Plan can best be understood if we separate the Plan into two parts as explained:

Part I — will pay 100% of all reasonable and customary charges for the following services and supplies **without a deductible:**

Hospital — Semi-private room and board accommodations and all other miscellaneous hospital charges for medical care during hospital confinement, excluding personal items, such as, telephone, TV, guest trays, etc.

Out-patient hospital charges for emergency care within 24 hours of an accident, or for surgery, will also be payable.

Provision is also made for covering certain expenses for Convalescent Nursing Home care following hospitalization. Details are included in the booklet to be distributed at a later date.

Surgery — The surgeon, assistant surgeon, and the anesthesiologist, regardless of where the surgery is performed.

Diagnostic-X-ray and Laboratory Fees necessary for the diagnosis and treatment of an illness or injury.

Doctor Visits — While confined in a hospital for which a room and board charge is made.

Ambulance Expense — Professional ambulance service to or from a hospital not to exceed 150 miles for any one trip.

Radiotherapy Expenses — For covered radiotherapy treatments, including materials and facilities.

Part II — Other Eligible Expenses Subject to Deductible and Co-Payment:

There are other areas of medical costs not mentioned in Part I but considered as eligible expenses. These expenses are subject to a deductible and benefits will be payable at 80% of these expenses.

After the deductible described below has been satisfied, benefits will be paid at the rate of 80%* for "other eligible expenses" incurred by the individual or family during the rest of the year, whether due to one or several accidents or sickness. However, if at a point during the year "other eligible expenses" of an individual exceed $2500 (excluding expenses used to satisfy the deductible), the rate of reimbursement for expenses in excess of that amount for the individual will be increased to 100%* and that rate will continue to apply to the end of that year.

*50% of the eligible expenses in the case of certain treatment of mental, psychoneurotic and personality disorders.

The Deductible

The individual deductible is the first $75 of "other eligible expenses" incurred during the calendar year. If a total of $150 of "other eligible expenses" is incurred collectively by the covered members of a family (not counting more than $75 for any one person) during the calendar year, benefits will be paid for eligible charges incurred by all covered members of the family during the remainder of the year without having to satisfy additional deductibles. Although a new deductible will apply each calendar year, expenses incurred in October, November and December which are applied against that year's deductible will also be applied toward the deductible for the next year and, thus, reduce or eliminate that year's deductible.

"Other eligible expenses" means expenses incurred by a family member for the following services or supplies:

1. Hospital out-patient charges which are not paid under Part I of the plan. Convalescent hospital expenses however, are not eligible expenses under Part II.
2. Doctor services for medical care and treatment (including charges for medications, materials and injectables administered by the doctor or under his supervision) which do not qualify for full reimbursement under the provisions of the plan. (See the Exclusions and Limitations section for limitations on doctors' services relating to mental, psychoneurotic and personality disorders.)
3. Private duty nursing care by a registered graduate nurse.
4. Speech therapy by a qualified speech therapist to restore speech loss, or correct an impairment due to a congenital defect for which corrective surgery has been performed, or due to an injury or sickness other than a mental, psychoneurotic or personality disorder.
5. Treatment by a physiotherapist.
6. Medical supplies - drugs and medicines dispensed by a licensed pharmacist; blood and blood plasma; artificial limbs, eyes and larynx; electronic heart pacemaker; surgical dressings; casts; splints; trusses; braces; crutches; rental of wheelchair, hospital bed or iron lung; oxygen and rental of equipment for its administration.

Exclusions and Limitations

Certain expenses are not covered by the insurance plan or payment is limited. Following are several important exclusions and limitations:

1. Mental, Psychoneurotic and Personality Disorders
   In the case of mental, psychoneurotic and personality disorders, the regular benefits apply to expenses incurred during a hospital stay for which a room and board charge is made, and to charges for administration of convulsive therapy, whether administered in or out of a hospital. For other expenses, the following will apply:
   a. Benefits will be payable at the rate of 50% after satisfaction of the deductible.
   b. For professional psychiatric services, not more than $40 a visit will be counted as eligible expenses (the maximum payment being 50% of $40, or $20 per visit), and not more than $1000 of benefits will be payable in a calendar year.
2. Dental Conditions*
   The insurance does not cover treatment of periodontal or periapical disease or any condition (other than a malignant tumor) involving teeth, surrounding tissue or structure. However, this exclusion does not apply to:
   a. Charges for the following dental services received within 12 months after an accident: treatment by a physician, dentist, or dental surgeon of injuries to natural teeth, including replacement of such teeth, and related x-rays. The charges for these services will be included with the "other eligible expenses" previously described.

*Note: Impacted teeth are no longer reimbursed.

3. Pregnancy
   Reimbursement of expenses arising out of pregnancy or resulting childbirth or miscarriage apply only to a covered female employee or the dependent wife of a male employee.
   The insurance does not apply to a pregnancy that commences before a female employee or dependent wife becomes insured.
4. Specific Exclusions
   The plan does not cover:
   a. Services or supplies received as a result of an accident related to employment, or sickness covered under Workmen's Compensation or similar law.
   b. Services or supplies furnished by or for the U.S. Government, or furnished by or for any other government unless payment is legally required, or to the extent provided under any governmental program or law under which the individual is, or could be covered.
   c. Anything not ordered by a doctor, or not necessary for medical care or any charge for any service or supply in excess of the reasonable and customary charge (the charge usually made by the provider when there is no insurance, not to exceed the prevailing charge in the area for a service of the same nature and duration and performed by a person of a similar training and experience, or for a substantially equivalent supply).
   d. Nursing, speech therapy, or physiotherapy rendered by yourself, spouse, or a child, brother, sister, or parent of yourself or spouse.
   e. Services or supplies received as a result of an act of war occurring while covered.
   f. Expenses in connection with cosmetic surgery are payable at 50% of reasonable and customary charges unless due to an accident occurring while covered.
   g. Examinations in connection with glasses or a hearing aid.
   h. Treatment of weak, strained, flat, unstable or unbalanced feet, metatarsalgia or bunions, except open cutting operations; corns, calluses or toenails, except removing nail roots and care prescribed by an M.D. or D.O. treating metabolic or peripheral-vascular disease.
   i. Expenses applied toward satisfaction of the deductible previously described.
   j. Any hospital expenses for which you are entitled to reimbursement as an employee under the California UCD law.

(Continued on next page)

THE PRUDENTIAL PLAN — Continued

5. Our Major Medical insurance plan will also contain a "Coordination with Other Plans" provision, and Modified Benefits will be provided for persons covered by Medicare; read the articles on these two items appearing elsewhere in this issue. These items may restrict the amount of benefits payable under this insurance.

In the very near future, a new group insurance booklet will be furnished to you. Included in this booklet will be a more detailed description of the revised benefits.

COORDINATION WITH OTHER PLANS

Our Group Insurance Plan contains a non-profit provision coordinating it with other plans under which an individual is covered so that the total benefits available will not exceed 100% of the allowable expenses.

An "allowable expense" is any necessary, reasonable and customary expense covered, at least in part, by one of the plans.

"Plans" mean these types of medical and dental care benefits:

(a) coverage (other than Medicare) under a governmental program or provided or required by statue, and (b) group insurance or other coverage for a group of individuals, including student coverage obtained through an educational institution above the high school level.

When a claim is made, the **primary** plan pays its benefits without regard to any other plans. The **secondary** plans adjust their benefits so that the total benefits available will not exceed the allowable expenses. No plan pays more than it would without the coordination provision.

A plan without a coordinating provision is always the primary plan. If all plans have such a provision: (1) the plan covering the patient directly, rather than as an employee's dependent, is primary and the others secondary, (2) if a child is covered under both parents' plans, the father's is primary, (3) if neither (1) nor (2) applies, the plan covering the patient longest is primary.

When ours is the secondary plan and its payment is reduced to consider the primary plan's benefits, a record is kept of the reduction. This amount will be used to increase our Group Insurance Plan's payments on the patient's later claims in the same calendar year — to the extent there are allowable expenses that would not otherwise be fully paid by our Group Insurance Plan and the others.

MEDICARE FOR ACTIVE EMPLOYEES

Changes in the law have provided Medicare coverage for individuals less than age 65.

All individuals age 65 and over are eligible for Medicare even when employed.

All employees who are 65 or older or have a spouse over 65 must file for Part A - Hospital and Part B - Doctor Services. Medicare benefits to which you may be entitled will be used to reduce the benefits you may receive from this plan.

It works this way —

1. In determining a claim payment under our insurance, the first step is to calculate the amount that would be paid if the person had no Medicare coverage.
2. The above amount is reduced by the Medicare benefits for the expenses upon which the claim under our insurance is based. In determining the Medicare benefits, the person will be assumed to have full Medicare coverage (that is, both Part A and Part B) whether or not the individual has enrolled for the full coverage.

If Medicare benefits are paid for expenses not covered under our insurance, they will not be used to reduce our benefits. In the case of services and supplies for which Medicare makes direct reimbursement to the provider, the amount of the expenses and Medicare benefits will be determined on the basis of reasonable and customary charges for the services and supplies.

THE ROSS-LOOS MEDICAL GROUP HEALTH PLAN

(Effective April 1, 1975)

Under this Plan, Ross-Loos doctors provide medical and surgical care as shown below — and hospital accommodations, ambulance transportation, and other services described herein, when ordered or approved by a Ross-Loos physician.

TREATMENT OF ILLNESS OR INJURY Ross-Loos provides diagnostic services and treatment, including specialist services, pediatric care for children, and general physical checkups. No limitation on number of services.	Doctor Office Calls and Consultations Doctor Calls in Hospital Doctor Calls in your Home	No Charge No Charge You Pay $5.00
SURGICAL OPERATIONS Any necessary surgical operations, recommended by your Ross-Loos attending physician, in the office or hospital.	Surgical Procedures (Office or Hospital)	No Charge
CARE FOR PREGNANCY Complete Obstetrical Care: Pre-natal Care, Delivery, Post-natal Care, and necessary Surgery.	If pregnancy commenced while a member If pregnancy existed on effective date of membership	No Charge Provided at non-member fees
Hospital Care for Pregnancy	If pregnancy commenced while a member If pregnancy existed on effective date of membership	Plan provides regular hospital care Provided at non-member fees
LABORATORY AND X-RAY PROCEDURES Laboratory Tests and X-ray Examinations.	In Ross-Loos Offices In the Hospital	No Charge Included under Hospital Services
PHYSIOTHERAPY Physiotherapy Treatments.	In Ross-Loos Offices In the Hospital	No Charge Included under Hospital Services
ALLERGY TESTS AND TREATMENT When provided in Ross-Loos Offices.	Allergy Tests Serum	No Charge Available at Reduced Charges
IMMUNIZATIONS AND INOCULATIONS For certain common communicable diseases.	In Ross-Loos Offices	No Charge
REFRACTIONS AND VISION CARE SERVICES When provided in Ross-Loos offices.	Refractions (Tests for Eyeglasses) Lenses and Frames	No Charge Available under Vision Care Plan
ALCOHOLISM AND DRUG ADDICTION Includes medical care and inpatient hospital care.	House calls are not provided	No Charge

(Continued on next page)

THE ROSS-LOOS MEDICAL GROUP HEALTH PLAN — Continued

CORRECTIVE APPLIANCES AND ARTIFICIAL AIDS When ordered by a Ross-Loos physician.	Artificial limbs, eyes and larynx; electronic heart pacemaker; surgical dressings; casts; splints; trusses; braces; crutches; rental of wheelchair, hospital bed or iron lung	No Charge
DIALYSIS AND KIDNEY TRANSPLANTS When ordered by a Ross-Loos physician.	This coverage will be integrated with benefits provided by Medicare	No Charge
FAMILY PLANNING When ordered and provided by a Ross-Loos physician.	Birth Control Pills, I.U.D.'s, Vasectomy, Abortion and Tubal Ligation	No Charge
PRESCRIPTION DRUGS Outpatient Prescription Drugs.	Provided by Ross-Loos designated pharmacies	$1.00 per individual prescription
IN AREA EMERGENCY MEDICAL CARE When you require immediate emergency treatment without the opportunity to contact Ross-Loos, this allowance will be made.	For Emergency Treatment only (Follow-up care to be received from Ross-Loos)	Plan Allows Up to $100 Maximum
OUT OF AREA CARE (Injury or Illness) When medical services are required while you are temporarily away from home.	For Doctor Care for injury or illness *plus* When Hospital Confinement Required Ambulance	Plan Allows Up to $5000 Maximum Regular Hospital Services Apply Up to 30 road miles per disability
NUCLEAR MEDICINE For test or treatment using radioactive materials in accordance with the provisions contained in the agreement.	When ordered by Ross-Loos	Plan Allows Up to $2000 Maximum
HOSPITAL CARE These services are provided during confinement in a hospital when ordered or approved by a Ross-Loos doctor. Services of anesthetist included. (Integrated with California UCD)	Semi-private Accommodations Intensive Care Unit Extended Care Facility Other Hospital Services Combined Maximum per disability	Plan Allows 100% Plan Allows 100% Plan Allows 100% (Limit one-half semi-private Plan Allows 100% allowance) 365 days
AMBULANCE TRANSPORTATION To or from a hospital, or both ways	Up to 30 miles per disability	Provided in full when ordered by Ross-Loos

ARBITRATION

In the event of any controversy between Group, a Subscriber or Dependent (whether a minor or an adult), or the heirs-at-law or personal representatives of a Subscriber or Dependent, as the case may be, and Ross-Loos (including its agents, physicians, employed physicians or employees), whether involving a claim in tort, contract, or otherwise, the same shall be submitted to arbitration. Within fifteen (15) days after any of the above named parties shall give notice to the other of demand for arbitration of said controversy, the parties to the controversy shall each appoint an arbitrator and give notice of such appointment to the other. Within a reasonable time after such notices have been given, the two arbitrators so selected shall select a neutral arbitrator and give notice of the selection thereof to the parties. The arbitrators shall hold a hearing within a reasonable time from the date of notice of selection of the neutral arbitrator. All notices or other papers required to be served shall be served by United States Mail. The arbitration shall be compulsory and binding and, except as provided herein, shall be conducted and governed by the provisions of the California Code of Civil Procedure.

INJURIES CAUSED BY THIRD PARTIES

In case of injuries caused by any act or omission of a third party, and complications incident thereto, services requested hereunder shall be furnished but will be charged for at Prevailing Rates. However, the Member shall not be required to pay any amount in excess of the total amount collected on account of such injury. Provided further that Ross-Loos shall have a lien on any recovery from such third party whether by judgement or settlement.

SERVICES NOT PROVIDED

Except such services as may be specifically provided no medical or hospital services will be provided for or on account of any injury or illness resulting from a major catastrophe, disaster or epidemic, war or act of war, or arising out of employment; treatment provided in a facility owned or operated by any government or provided under any law or plan of any government; custodial care; cosmetic surgery; dental care; neuromuscular rehabilitation, speech and occupational therapy; organ transplants, except kidney transplants; hyperbaric oxygen chamber; blood or plasma; hypodermic medication; prosthetic devices; learning aids, hearing aids, contact lenses; special duty nursing; no compensation will be provided for services for which the Member is not obligated to pay, such as Free Clinics, Alcoholics Anonymous, Synanon, etc.

IN AREA EMERGENCY MEDICAL CARE

Ross-Loos doctors are on duty 24 hours a day — holidays included. When emergencies arise, *call your nearest Ross-Loos office* and follow the directions given you.

Should you suddenly become seriously ill, or experience an injury requiring immediate care, *with no opportunity to call Ross-Loos,* up to $100 will be provided for emergency services received within 24 hours of the emergency. **Followup care must be secured from a Ross-Loos doctor.**

This provision covers only services of a physician or services provided in the outpatient department of a hospital.

When the medical condition, in the judgment of Ross-Loos, prevents transfer to Ross-Loos care and hospital confinement is required, the regular hospital services will be available.

OUT OF AREA CARE

When medical care becomes necessary during temporary residence or travel outside the Service Area (more than 30 air miles from your regular place of residence and from the nearest Ross-Loos office), this Plan will provide the medical services described herein up to the amount shown for:

Accidental Injury: For necessary emergency treatment required for injury received from an accident occurring while a Member of the Plan.

Illness: For necessary emergency treatment received for illness.

If hospital confinement is necessary, the regular allowances for Room and Board, Other Hospital Services and Ambulance will also be available.

Services will be provided only to the extent that they would have been provided in the Service Area by Ross-Loos, with services limited to no more than the amount set forth in the California Medical Association's Relative Value Study, 1964 edition, using a unit value of $8.00 up to a maximum of $5000.

Services will be provided only until such time as the medical condition of the Member permits transfer to the care of a Ross-Loos doctor.

Any Member requiring Out of Area Care should notify a Ross-Loos office as soon as possible after care is commenced.

Dependent children attending school on a full-time basis at a public or licensed private educational institution and living away from home and outside the Service Area shall be considered to be in "temporary residence" for the purpose of this coverage.

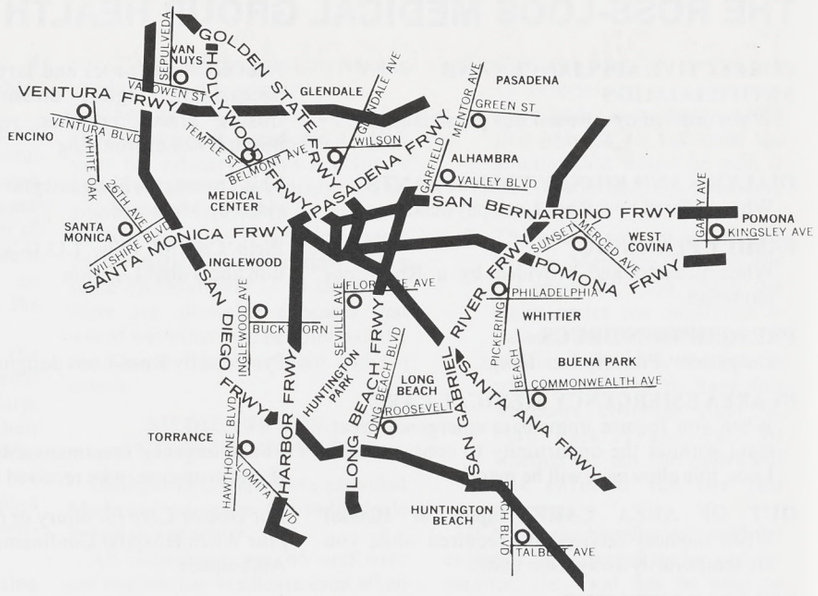
Ross-Loos Office Locations

Ross-Loos Medical Center	PHONE NUMBERS During Office Hours*	After Hours
1711 West Temple St., L.A. 90026	413-1313	413-1313
Satellites:		
Van Nuys: 6844 Sepulveda Blvd.	781-5400	762-2158
West Covina: 1300 South Sunset Ave.	960-2711	960-2711
Community Medical Offices:		
Alhambra: 1000 South Garfield Ave.	289-0271	289-0271
Buena Park: 7811 Commonwealth Ave.	521-0253	521-0253
Glendale: 520 East Wilson Ave.	243-1181	242-3121
Huntington Beach: 17822 Beach Blvd., Suite 442	848-8855	848-8855
Huntington Park: 7648 Seville Ave.	582-8274	413-1313
Inglewood: 740 South Inglewood Ave.	671-7501	677-5336
Long Beach: 3850 Long Beach Blvd.	424-8591	424-8594
Pasadena: 100 South Mentor Ave.	793-4103	796-2223
Pomona: 920 North Garey Ave.	622-1031	622-1031
Santa Monica: 2515 Wilshire Blvd.	828-3447	828-3447
Torrance: 3655 Lomita Blvd., Suite 210	373-8491	373-8491
Whittier: 12227 East Philadelphia St.	698-9563	698-9563
Mental Health Facility:		
Encino: 17835 Ventura Blvd.	881-0400	881-0400

Residence calls available only within 15 miles of one of these office locations.

*Regular Office Hours:
Monday, Tuesday, Thursday, Friday, 9 A.M.-6 P.M.
Wednesday and Saturday 9 A.M.-1 P.M.

Please Note: Telephone numbers are subject to change. If you have any difficulty: (1) Consult your directory; (2) Call Ross-Loos Medical Center, 413-1313; or (3) Call the operator.



Comparison of Plans — Prudential, Ross-Loos

TYPE OF BENEFITS	PRUDENTIAL PLAN	ROSS-LOOS PLAN
HOSPITAL		
Room & Board	100% Semi-private	100% Semi-private
Other Hospital In-patient Services	100%	100%
Convalescent Nursing Home (Extended Care Facility)	60% of previous hospital semi-private rate	50% of previous semi-private rate
AMBULANCE	100% up to 150 miles	100% up to 30 road miles
SURGERY		
(Office or Hospital)	100% of Reasonable and Customary	100%
MATERNITY		
Hospital	100% semi-private (does not include nursery charges)	100% (includes nursery charges)
Physician	100% of Reasonable and Customary	100%
PHYSICIANS' SERVICES		
Office Visits	*80% after deductible up to $2500, 100% thereafter	100% - no limit
Hospital Calls	100% of Reasonable and Customary	100%
Home Calls	*80% after deductible to $2500, 100% thereafter	Patient pays $5 per visit
IN-AREA EMERGENCY		
Hospital	(Regular Plan benefits will (apply (see complete description	100% if required and approved
Physician	(of Plan shown elsewhere in (this article	$100 for illness or accident
OUT-OF-AREA EMERGENCY	(	$5000 for professional services at $8/RVS plus normal hospital benefits; if required applies to illness or accident
LABORATORY & X-RAY	100% of Reasonable and Customary	100%
RADIOTHERAPY & NUCLEAR MEDICINE	100% of Reasonable and Customary	100%
PHYSIOTHERAPY	*80% after deductible to $2500, 100% thereafter	100%
ALLERGY - LABORATORY TESTING	100% of Reasonable and Customary	100%
ALLERGY - TREATMENT	*80% after deductible to $2500, 100% thereafter	100% - medication: reduced rates
PSYCHIATRIC CARE		
In-patient	100%	100%
Out-patient	*Maximum eligible $40 per visit payable at 50% after deductible; maximum $1000 per year	First ten visits free — patient pays $17.50 per visit for additional visits per calendar year

TYPE OF BENEFITS	PRUDENTIAL PLAN	ROSS-LOOS PLAN
PRESCRIPTION DRUGS	*80% after deductible up to $2500, 100% thereafter	Patient pays $1 per prescription at Ross Loos' designated pharmacies (includes insulin) which are written by Ross-Loos' doctors
IMMUNIZATIONS & INOCULATIONS	Not covered	100% for specific immunizations and inoculations
PREVENTATIVE PEDIATRIC CARE	Not covered	100%
REFRACTIONS & EYEGLASSES	Not covered	100% for refractions; eyeglasses — standard lenses and frames provided at no charge; lenses may be changed once per year, frames may be changed every two years
PERIODIC CHECKUPS	Not covered	100% examination, laboratory and x-ray
FAMILY PLANNING		
Birth Control Pills	Not covered	100%
Contraceptive Devices	Not covered	100%
Vasectomies	100%	100%
Abortions	100%	100%
Tubal Ligations	100%	100%
CONGENITAL ABNORMALITY	50% Surgery — 100% Hospital	100% if occurred while a member
CORRECTIVE APPLIANCES & ARTIFICIAL AIDS	*80% after deductible to $2500, 100% thereafter	100% when ordered by a Ross-Loos doctor
DURABLE ITEMS	*Rental — 80% after deductible to $2500, 100% thereafter	100% when ordered by a Ross-Loos doctor
DIALYSIS & KIDNEY TRANSPLANTS	100% - integrated with Medicare	100% - integrated with Medicare
ALCOHOLISM & DRUG ADDICTION		
Hospital	100%	100%
Physician	Treated as any other illness	100%
COSMETIC SURGERY	100% — Surgery if due to accident while insured -50% otherwise	100% if required for accident or illness only
SERVICE AREA	Does not apply	Southern California — 16 facilities
CHOICE OF DOCTOR	Patient chooses own doctor	Patient chooses a family doctor from the staff of Ross-Loos' Medical Group
CHOICE OF HOSPITAL	Patient and doctor choose hospital where doctor has privileges	Patient will be admitted to one of 24 hospitals used by Ross-Loos in Southern California

***THE DEDUCTIBLE — The individual deductible is the first $75 of "other eligible expenses" incurred during the calendar year. If a total of $150 of "other eligible expenses" is incurred collectively by the covered members of a family (not counting more than $75 for any one person) during the calendar year, benefits will be paid for eligible charges incurred by all covered members of the family during the remainder of the year without having to satisfy additional deductible. Complete Plan description is shown elsewhere in this article — please refer to it for specific clarification.**

Test Pilot Prolongs Career By Keeping Options Open

Editor's Note: The following story was received by Captain Ford's father, Birch Ford, a senior engineer in Aircraft Division Advanced Avionics Engineering, written by Gerry Burton, Avalanche-Journal staff, Lubbock-Avalanche Journal. Captain Ford flight tests T-38s at Reese AFB, Tex.

By Gerry Burton
Avalanche-Journal Staff

He was 20,000 feet up, "really hauling the mail in an afterburner climb" . . . and both generators went out.

By the time he leveled off, he was 27,000 feet up with one engine flamed out. At 24,000 feet he got that one started only to have the other go out.

Then — both engines flamed out, and Captain Ron Ford, flight test pilot at Reese Air Force Base, Tex., was alone with a dead plane 30 miles from home.

For bringing the T-38, surging through South Plains skies in complete communication blackout, Ford received a "Well Done" from the U.S. Air Force's Air Training Command.

To Ford, it was a simple job of drawing on experience, choosing options and never reaching the final option of bailing out.

It was the closest to bailing out he ever came in 2050 hours in the air, including more than 300 combat hours in the F-4 Phantom in Vietnam.

"I was ready to go," Ford, whose job is to test aircraft after maintenance, said. The situation just never got to the point where he considered it hopeless.

"When you are moving that high at that speed, you have air speed and that's all you need," he added.

First Sign of Trouble

At the first sign of trouble he "looked over the side and spotted the bail out area" to which he could have glided if necessary. After engines restarted, they surged so he headed for Reese.

Without communication, he couldn't inform the tower of his needs, just picked a spot in traffic and put the plane down.

"At any time, until the plane was 50 feet from the ground I could have added power, turned it and bailed out," Ford explained.

At no time, he added, was a populated area endangered by the crippled plane.

"A plane just doesn't fall out of the sky," he said, adding that he could have maneuvered it, without engines, to about any spot and aimed it groundward before he ejected.

Ford, of Santa Ana, Calif., has been at Reese four years, serving as instructor pilot and flight commander before moving into maintenance check flight testing.

'Never Took A Hit'

He "never took a hit" in Vietnam where his air difficulties involved "people shooting" at the F-4. Experience gathered there, where a pilot flew a plane as soon as it was patched up, comes in handy during tests.

"When a bird such as that (the T-38 Talon) comes out of maintenance, we exercise every system."

At Reese, where students are learning to fly, "a needle could jump and psych him into bailing out."

Reese Test Pilots

Flight test pilots — there are five under Major George P. Swanson at Reese — give all Reese planes, T-37 and T-38, a solid workout after maintenance to make sure nothing jumps to startle a student, that he has a safe plane to fly. Malfunctions are handled as they happen by test pilots where they might "freeze" a student.

With communication gone and engines flaming out, Ford picked alternatives from experience.

"It was immediately apparent, it was just me and the airplane," he grinned.

"You always leave yourself an option."

Choosing the right options made that particular ride "Well Done."

CAPTAIN RON FORD, flight test pilot at Reese Air Force Base, returns from flight after checking out the performance of a T-38 Talon.

Northrop Newsmakers

Ralph Carey, coordinator of Training and Community Relations, and **H. W. (Bill) Jones,** manager of Library Services, Aircraft Division, will participate in a Workshop on Management for Librarians at the Universal Sheraton Hotel, Feb. 27.

* * *

J. G. Louvier, procurement manager, Forging, Aircraft Division, will be general program chairman of WESTEC 1975 sponsored by the American Society for Metals, to be held Mar. 10 through 13, at the Los Angeles Convention Center.

Other Northrop personnel presenting papers are:

D. L. Stansbarger, "Advanced Composites Applications at Northrop," **M. M. Mann,** "CO Laser: New Technology," **K. C. Wu,** "Metallurgical Aspects of Titanium 6A1-6V-2Sn Welds," **R. E. Herfert,** "Use of Failure Analysis at Northrop," **M. S. Misra,** "The Dependence of Stress Corrosion Cracking and Intergranular Corrosion Susceptibility on Age Hardening in 201 Aluminum Castings," and **A. N. Siggson,** session chairman, "Manufacturing With SI Metrics."

* * *

John Voorhees, Facilities Engineering, Aircraft Division, earned his bachelor of science degree in industrial-technology-manufacturing from California State University-Long Beach.

* * *

Paul Lehman, director, Aircraft Division Equal Opportunity Programs, was featured speaker at March Air Force Base, Jan. 15, for Memorial services honoring the birthday of Dr. Martin Luther King, Jr.

* * *

Betty Duba, Electro-Mechanical Division, has been elected president of SAVE, the Orange County Chapter, Society of American Value Engineers.

* * *

Sarann Kruse, Safety analyst, Aircraft Division, has just completed a course in Industrial Hygiene Measurements at the National Institute of Occupational Safety Health, Cincinnati, Ohio.

ARTHUR SYNDER, 14th district councilman of Los Angeles, left, presents plaque of acknowledgement to all Northrop employees for the help they gave to the distressed American-Spanish speaking people in the depressed area of East Los Angeles during the holidays. Accepting the plaque are Jack Mannion, vice president, Administration; Marie Tully, Christmas Gift Program chairman; and Hank Carrera, Mechanical Design.

AID Campaign Results Top Last Year's Record

Employee participation in the AID campaign last year resulted in $290,611.07 in contributions, compared to $256,194.14 for the previous year, according to Doris Robinson, chairman, AID campaign.

"Most employees are not aware that when they contribute to AID through the payroll deduction plan and do not specify a favorite charity, that their monies are divided equally among 18 national charities and these contributions are channeled to each individual's own community," Doris explains.

"When we joined AID, we specified that we wanted a listing of our participating employees broken down by zip codes for the purpose of guaranteeing that the individual's community benefited from their contribution."

Doris further stated that employees who designate are being asked to consider specifying only a portion of their pledge to a favorite charity and the other portion to the general fund so that it might better benefit the employee's own community.

Any questions regarding the AID campaign and pledging procedures may be forwarded to Doris at ext. 2966, Aircraft Division.

How Do You Win And Lose at Golf?

It isn't easy to be the best and the worst golfer at the same time, but Tom Godfrey managed to do just this in a recent tournament at the Electro-Mechanical Division when he won both the tournament and the booby prize.

In addition to winning the tournament with an 89 gross score, Tom also was awarded a prize axe from Golf Commissioner Ed Kong for hitting the most trees — 10.

"How any golfer can hit two trees and still par a hole is beyond me," Commissioner Kong said. "But Tom did it."

Coleman Receives Computer He Won In 1973 Club Drawing

With the wide acceptance of small computers, Hewlett Packard Corporation initiated, in 1973, what is called a Hewlett Packard Calculator User's Club.

To encourage contribution of programs to the club, Hewlett Packard awards a prize to the author of one program chosen at random out of each 30 programs submitted. The prize is a choice of some accessory for the HP 9820 calculator worth up to $500. One program submitted also entitles club members to any five programs selected from the user's program catalogue.

Randy Coleman, Aircraft Division engineering specialist, and a club member, submitted a program in 1973 which was chosen by the club.

The User's Club headquarters is located in Böblingen, West Germany, and serves as a clearing house for the exchange of programs among various users of the Hewlett Packard 9820 calculator throughout the world.

Coleman felt that none of the accessories the club offered as prizes were suitable for his needs, so after much correspondence and many months later, he arranged for a credit memo of $500 towards the purchase of any Hewlett Packard calculator.

Because Hewlett Packard was about to introduce a new and very versatile pocket computer in December 1974, the HP-55, Coleman decided to wait and use his credit for the new calculator as his prize. On January 27, 1975, the sales representative of Hewlett Packard delivered the calculator to Coleman. Now he is the "first kid on the block" to have a HP-55 — a pocket computer essentially equivalent to the most versatile typewriter-sized computers of three years ago.

RANDY COLEMAN, left, finally receives his prize, a HP-55 calculator he won as a result of submitting a program in 1973 to the Hewlett Packard User's Club from Dave Etter, Hewlett Packard sales representative.

Recreation Notes

A joint meeting of the Travel and Golf Clubs will be held at the Alondra Club, Thursday, Feb. 27 at 7:30 p.m., according to Dave Carney, travel commissioner, and Harold Weller, golf commissioner. Anyone wishing to have dinner at the meeting, should make their own reservations.

Purpose of the meeting will be to discuss the upcoming Caribbean Affair in October. Movies and slides will be shown of the cruise, sightseeing, golf and tennis.

Caribbean Affair is a special program by NRC which consists of your plane fare, hotel, cruise, meals and golf, all in one package. For the cost of $799, the features of the affair are: seven days at sea aboard Norwegian Caribbean's MS Starward visiting Port-au-Prince, Haiti; Port Antonio and Montego Bay in Jamaica, and Nassau, Bahamas, with golfing at each port and all meals while aboard ship. Five days will be spent ashore at Miami's Doral Country Club where visitors can play three rounds of paid golf, unlimited tennis and sightseeing.

The tour departs from Los Angeles via National Airlines to Miami on Oct. 10. Breakfasts and dinners are included while in Miami.

Because of limited space, reservations will have to be made on a first-come, first-served basis. Contact Cathy Paris, Personnel Activities, Aircraft Division ext. 2486 for reservations.

★ ★ ★

Northrop employees may again enjoy the fun at Sea World during Northrop Days at Sea World on Mar. 22 through Mar. 30.

Admission prices will be reduced to $3.40 for adults and $1.80 for children. As an added bonus, Sea World is offering two free rides per person.

Arrangements have been made for Northrop employees to receive a 50 per cent discount off normal season group rates at the Islandia Hyatt House Hotel which is within walking distance of Sea World.

Special discount coupons will be available soon through Personnel Activities.

★ ★ ★

NRC Travel Club has scheduled a Las Vegas Deluxe Champagne Holiday for Apr. 25 through 27.

The club will be staying at the Hacienda Hotel. Chartered Greyhound motor coaches will leave at 7 p.m. from Aircraft Division Gate 5 to Las Vegas and return. Cost of the holiday is $52 for two nights lodging, rooms double occupancy, and includes many extras such as champagne breakfast, midnight show in the Fiesta Room, 20 lucky nickels.

Sally Fullenwider Is Chosen Queen

Sally Fullenwider, 16-year-old daughter of Clay Fullenwider, Direct Cost Control, Aircraft Division, was crowned 1974-75 Queen of Courts at the recent Huntington Beach-Cypress basketball game.

For a change of pace, Queen Sally and the four princesses were escorted by their proud fathers, rather than members from the student body. Sally presided at a reception and dance following the game.

Sally Fullenwider

During her junior and senior years, Sally has kept herself busy as a song leader. She is also a member of the Harmonaires, a group of singers selected from the concert choir, who perform locally and are planning a tour of Northern California.

She was chosen "Girl of the Month" and "Key Club Sweetheart" at Huntington Beach High School and represents her school on the youth council at the Broadway Dept. Store.

Sometimes her father tells her she is doing too much, but her answer to that is "I like to keep busy!"

Archery Substitutes For Cupid's Arrows

Cupid's arrows are traditionally responsible for love affairs, but the wedding of Pat Knowles, Electro-Mechanical Division secretary, and William F. Young of El Toro Marine Base was due to archery arrows.

Both young people are archery enthusiasts. They had seen each other at archery meets, but had never met. Then a mutual friend, who had had no success in bringing them together any other way, deliberately changed the place cards at an archery banquet held at El Toro so that they would sit together.

That was all that was needed. The wedding was Dec. 21, at the Chapel of Love in Anaheim.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Corvette, 1963, split window cpe., 350 cu. in., 350 h.p., p/w, 4-spd. std. trans., $3100. 714-968-2782.

Motorcycle, Yamaha, 1972 360 MX, Curnutt shocks, ext. swing arm, $595. 213-679-7387.

Motorcycle, Yamaha RD250A, street, 210 miles, $850. 213-644-3376.

Motorcycle, Honda 90, trail, 700 miles, $150. 213-347-2665.

Cadillac, 1969 Sedan DeVille, stereo & tapedeck, full power & a/c, $1595. 714-870-8966.

Motorhome, 1972 Pace Arrow, 20' 413 Dodge eng. w/headers, sleeps 6, trans. cooler, $7400. 805-273-3312.

Motorcycle, 1963 Honda, all new parts & seat, elec. starter, $200. 213-866-4104.

Motorhome, 1974 20' Open Road w/roof air, tape deck, generator, still warranted, Chev. 350 eng., 9000 mi., p/s, p/b, auto, $1000 & $200 mo. pymts. 714-633-5282.

Volkswagen, 1968, new tires, paint, $900. 213-391-2326.

Pinto, 1974 Delux, 2300 cc, 4-spd., sport whls. & radials, other extras, $2500. 213-396-2396.

Volkswagen, 1967, $900. 714-772-4306.

Ford, 1967 LTD, 4-dr., disc bks., a/c, r/h, 82,000 mi., $950. 213-339-6874.

Challenger, 1970 S.E., 383 blt., racing trans., 4:10 gears, extras, $12,500. 213-598-3900, 714-827-1923.

Motorhome, 1970 Lifetime Continental, 2 a/c, generator, fully self-contained, all extras, 318 Dodge eng., forced air ht., $7900. 213-371-8846.

Chevrolet, 1972 Monte Carlo, p/s, p/b, AM/FM w/rear spkr., $3495. 213-326-7922.

Matador, 1974 coupe, 17,000 mi., a/c, all extras, small V-8, $3695. 213-371-2511.

Volkswagen, 1967, AM/FM radio, good tires, $600. 213-370-3407.

Motorcycle, 1973 Suzuki, 185 cc, 1890 mi., carrier rack & helmet, $575. 213-320-4243.

Motorcycle, 1974 Honda 550-4, extras, $1200. 213-322-7681.

Truck, 1969 Chev., ¾-ton, air, r/h, w/1973 El Dorado 9½' overcab, fully contained, $3600. 213-644-4657.

Toyota, 1974 Celica, a/c, auto., 2800 mi., $3300. 213-675-2387.

Volkswagen, 1969 Squareback, $950. 213-379-7488.

Toyota, 1974 Celica GT, AM/FM, 5500 mi., 5-spd., radials, mags, $4300. 213-833-9430.

Minibike, Gemini 50 cc, $125. 213-325-4767.

Maverick, 1970, 6 cyl., 3-spd., tuned headers, r/h, $1400. 805-947-8630.

Motorcycle, 1973 Honda CL-350, shroud windshield, $700. 213-697-0819.

Miscellaneous For Sale

Wheels, tires, 2 14", fit Ford, Dodge, AMC, $20. 213-378-1026.

Car Trailer, 16', will carry tractor, $295. 213-534-0437.

Pups, German shepherd, avail. Mar. 1, $15 ea. 213-973-2208.

Tape Player, Panasonic, 8-track, $25. 213-675-2155.

Golf Clubs, set of Wilson irons, 2-pitching wedge, $40. 213-325-5245.

Stove, eye-level broiler, $100; refrigerator, $50; dishwasher, $75. 213-674-9347.

Sofa, 8' quilted, cushion back, h/wood frame, $50; mattress & box spring, kingsize, w/frame, $60. 213-545-0030.

Vacuum, Electrolux compact, $15; vacuum attachments, Kirby, $22.50. 213-376-4831.

Piano, spinet, walnut finish, $395. 213-657-3889.

Utility Trailer, 4' x 6', all metal w/tie rails, mfd. by American Trailer Co., $225. 213-320-8127.

Miscellaneous For Sale

Ice Skates, boys', figure, Hyde, size 6, w/blade guards, $10. 213-378-2790.

Horse, 11 yr. old beginner's white mare, $300. 213-378-3845.

Sailboat, Cal 2-24, fully equipped for race or curise, $5750. 213-645-9836, 213-273-6511.

Aquariums, 2 10-gal., built in 6' cabinet w/all access. incl. pumps & some fish, $75. 213-371-4506.

Bedroom Corner Group, innerspring beds, 2 twin size & storage table, coverlets, back cushions, sheets, mattress pad, $150. 213-540-8026.

Target Pistol, 22 cal hi-standard supermatic Citation, holster & belt, $125. 714-826-3449.

Pups, sheltie, AKC reg., 8 wks. old, $125 ea. 714-531-3110.

Wheels, 4 mag a/p wires, 5½-13 incl. caps, lugs & rim locks, fits Toyota & Datsun, & lugs, 4, Ford & Chev., $80. 213-429-1732.

Dresser, walnut, triple, $125; desk, walnut, $65; end table, $25. 213-645-3906.

Dining Room Set w/hutch, $1000; grandfather's clock, Emperor, w/Westminster chimes, $400; Stoneware, 12-pl. setting, $250, items never used. 213-476-2677.

Plants, 1 gal. Clivias, $1.50; 1 gal. hibiscus, $1; lge. piggy back, $5. 213-427-8734.

Sailboat, sabot, Sidney, complete w/sail, $350. 213-641-0974.

Wristwatch, Omega Seamaster, men's electronic w/days & date, chronometer, water resist., $175. 213-322-2323.

String Guitar, nylon, case, $10. 213-675-7316.

Chair, off white, $70. 213-377-7317.

Bicycle, Schwinn Continental, 10-spd. frame, lge. w/wheels & parts, disassembled, $10. 213-540-2227.

Refrigerator, Gibson, white, 57" h. x 30" w. x 26d., needs work, $10. 213-677-7421.

Snow Tires, 2 600-12, $25. 213-763-6182.

Chest, 4-drwr., $65; night stands, 2 No-Mar, $35; baby bed & mattress, $45. 213-863-3758.

Freezer, upright, $125; bicycle, 10-spd., used twice, $90. 213-347-2665.

Skis, 165 cm w/bindings, $35. 213-498-2300.

Stole, beige mink, like new, $150. 213-370-8930.

Couch & love seat, blue & green velvet, Spanish style, $250; love seat, black leather, $25. 213-644-6109.

Studio Couches, 2, w/bolsters, $80. 213-676-4213.

Sailboat, 1974 Venture, 24', fully equipped w/sails, genoa jib, lifelines, lavatory, 6 h.p. Johnson-Evinrude motor, sleeps 5, $4800. 805-942-5829.

Fenders, 1965 VW, rear r.h. & l.h., $7.50 ea. 714-925-3516.

Electronic Flash, Vivitar Z92, extra batt., sensor, flash bracket, $90. 213-835-3869.

Clothing, ladies, new & used, size 7, 8, 9, shoes, size 6, 6½, purses, many items, $1 & up. 213-644-3922.

Sewing Machine, zig-zag, $30. 213-379-3134.

Beds, twin, Spanish style, solid oak, head & foot boards, w/railings, $75 ea. 213-675-5265.

Sailboat, 14' Satelite, fiberglass, trailer, cover, new tires & whls., $700. 213-374-8608.

Golf Bags, 2, $20 & $7; golf cart, Ajay, $8. 213-374-1889.

Tire Chains, fit 5:60 x 14, tires, $10. 213-371-1438.

Sailboat, 24' Bayliner Buccaneer, new in July, completely equipped, $9000. 213-378-7846.

Wedding Dress, never been worn, size 9, $90. 213-545-2046.

Wanted To Buy

Rollaway Bed, 48", good condition. 213-545-9524.

Barbell Plates, 25 & 50 lb., steel preferred. 213-322-5136.

Cameras, old Rangefinder specially Leica, Canon, or similar, half-frame 35mm, Polaroid model 180. 213-413-4642.

Hardtop, 1963 to 1967 Corvette, removable. 213-324-3625.

Darkroom equipment. 213-676-7087.

Guns, used or antique, regardless of age or condition. 213-457-7086.

Roadster Hardtop, for 1967 Mercedes Benz 230SL. 213-826-3853.

Bed Divan, not over 6' long, reasonable price. 213-545-7952.

RECEIVING A manufacturing status report on the F-5E International Fighter was Commander Jack Ready, seated in cockpit, of first Navy camouflaged Tiger II during tour of Palmdale production facility. Briefing Commander Ready were from left, Stan Weeks, base administrator; Russ Scott, Northrop test pilot; and Lt. Colonel L. A. Morgan, special assistant to the Air Force Plant Representative Office.

Electronics Division Announces Telephone Extension Changes

All telephone extensions at the Electronics Division, Avionics Department, Hawthorne, have become four-digit extension numbers, according to Jacqueline Ockerman, supervisor, Communications.

The prefix digit "2" to all existing three-digit extensions has been added. For example, extension 123 has become 2123. However, the tie-line dialing into the department remains unchanged.

"This change was necessary to provide the facility with a significant number of additional extensions since presently available unused extensions are nearly exhausted," Mrs. Ockerman said.

Extensions in the 600 series at the Palos Verdes facility have been discontinued. Personnel are asked to refer to the list in the company announcement for the new extensions.

Wanted To Buy

Boat, alum., 12 - 16' &/or 15 h.p. motor; table, 44 - 48" round, oak, with or w/out leaves. 213-676-5921.

Piano for beginner. 714-956-7838.

Camper, shell or sleeper, for 1966 El Camino. 213-754-3665.

For Sale or Trade

Dryer, Hotpoint elec., trade for 110-220 v.a.c. for gas dryer. 213-676-1929.

Motorcycle, 1970 Moto-Guzzi, 750 cc, police special, 5000 mi., since o/haul, $1500 or trade for eq. equity in Corvette. 213-634-0126.

Motorhome, 1973 Discover, 25', many extras, gen., a/c, p/s, p/b auto., Chev. chassis, 454 eng., $14,-500 or take mini motorhome in trade. 213-892-8487.

Trumpet, Conn Director, $75 or consider trade for saxophone or baritone. 805-527-0694.

Personals

Wishing all my friends farewell, moved to northern Calif. I'll miss you all very much. ELLEN SEATON.

My sincere appreciation to my friends at Northrop for the flowers & expressions of sympathy on the death of my husband. MARTHA KOLLAR.

Sincere thanks to my many friends at Northrop for their kindnesses & concern shown to me during the loss of my beloved father. BETTY EVANS.

My heartfelt thanks for the flowers, cards & other expressions of sympathy at the loss of my mother, Mrs. Clara H. Will. D. W. (CHARLES) JURS.

The family of Margaret Bruchez wishes to sincerely thank all who were so thoughtful & sympathetic during her illness & passing. CECIL & BERT OSTERBERG.

Personals

Would like to say thank you from our hearts for all the cards & flowers during our time of sorrow. MRS. JAMES DAVIS & SON.

My sincere thanks & appreciation to my friends & fellow workers at Northrop Palmdale, Edwards & the main plant for the wonderful dinner party & gifts for my retirement. A. C. "AL" GRABER.

I would like to thank all of my many friends for the wonderful retirement luncheon & gift. JANUS RINGO.

A sincere thank you to all of our friends at Northrop for the many cards, flowers & good wishes sent during my impromptu sojurn in the hospital. CURT SHERRILL & FAMILY.

My sincere thanks to all my friends who helped make my recent illness & surgery a success with your many visits, cards, flowers & good wishes. I shall be forever grateful. NED MILLER.

Many thanks to those that made my retirement something to remember for many years to come. Best wishes to all. HAROLD R. LANDIN.

Free

Dog, shepherd & collie, 3 yrs., needs good home. 213-675-3889.

Pups, mixed beagle & basset, 6 wks. old, 2 male, 2 female. 213-371-2783.

Dog, 2 mo. old female, mix breed, small. 213-429-5150.

Kittens, litter box trained. 213-644-5348.

Ride Wanted

Homebound, leave 5 to 6 p.m. from Electronics P.V. to Rollingwood tract near Hawthorne Blvd. & P.V. Drive North, will pay. 213-378-3845.

NORTHROP NEWS

Vol. 33 **No. 2**

Published monthly by Northrop Corporation Employee Communications.

Managing editor, Rosemary Hussey. Editors: Ivy Edmonds, Electro-Mechanical Division; Tom Quintana, Aircraft Division; Jim Ramsey, Electronics Division; Park Irvine, Ventura Division; Chuck Campbell, Precision Products Department. Correspondent: Northrop Architectural Systems, Wanda Fisher.

Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250. Telephone: (213) 675-4611, ext. 4273.

AIDATS Briefing

FOLLOWING completion of its highly successful flight test program of AIDATS (Army In-Flight Data Transmission System) the Electronics Division invited selected news media representatives to view the system in operation at Palos Verdes. Above, observing AIDATS imagery transmission, described by Program Manager Art Gandy, are Barry Miller, center, senior editor, *Aviation Week & Space Technology*, and James Bronson, South Bay Daily Breeze. At left, Nieson Himmel, West Coast editor for *Aerospace Daily* is briefed by Carl Bose, manager, Advanced Development.

NRC Calendar . . .

Northrop Recreation Club 12-inch slo-pitch softball league starts Apr. 8. Games will be played on Tuesday and Wednesday evenings. A managers' meeting will be held at the NRC Clubhouse on Mar. 12 4:30 p.m. Deadline for entries is Mar. 21, according to Ervin Schott, Softball Club commissioner, Aircraft Division ext. 1495.

* * *

The Bridge Club is seeking new members. Players are invited to attend the club on the second and fourth Fridays of each month at the NRC Clubhouse. Game starts at 7:30 p.m. All Northrop employees, retirees and guests are invited.

* * *

The Northrop Soccer Club is entered in the Peninsula Soccer League. Games are played every Sunday morning at various locations throughout the South Bay area. Employees or their dependents interested in participating should contact Norm Jackson, commissioner, Aircraft Division ext. 1815.

The club participated in a seven aside tournament sponsored by the Norwegian Club of San Pedro. Sixteen teams competed in the day long event. The Northrop club won third place trophy.

Team members were: John Young, Gil D. Benedetto, Felix Flores, Ed Vargas, Mark Morgan, Fred Molina, Alfred Ibarra, Harry Shortland and Jimmy Lillie.

* * *

The Northrop Ski Club has scheduled a class on ski repair in which they will demonstrate flat file, base repair and hot wax, according to Terry Dickson, commissioner. The meeting will take place at the NRC Clubhouse on Thursday, Feb. 27.

* * *

NRC Sea Anglers held their annual awards meeting in January to recognize outstanding accomplishments during the 1974 fishing season.

Mel Parrish, past commissioner, presented awards to Elmer Baldwin, Dave Cumberland, Flori MacCorkell, Dennis Okada and Dennis Chambers, all of Electronics Division, and to Frank Nakatsukasa and Bob Meffan, Electro-Mechanical Division.

"Fisherman of the Year" honors went to Bob Koerner, Electronics Division.

For information regarding NRC Deep Sea Fishing activities contact Dennis Okada, commissioner, Hawthorne ext. 281.

Belgian Air Force Delegates Omega Acceptance to Division

In recognition of the high standards of the Quality Control group, the Belgian Air Force (BAF) has delegated acceptance authority for Northrop's airborne Omega systems directly to the Electronics Division.

This authority to inspect and accept Omega units on behalf of the BAF marks a first for the division, according to Anthony Laviano of International Contracts.

Electronics Division in December received a $970,000 contract from the BAF to equip its C-130 Hercules transports with Northrop Omega systems. Deliveries of systems are to begin in late April and continue through January 1976.

During mid-January, two Belgian Government Air Force quality representatives conducted a survey of division quality control procedures, methods and organization. As a result of the review, acceptance authority was delegated directly to the division, according to H. W. (Woody) Sherwood, chief, Quality Control group.

"We have established a precedent in Europe for a very well organized quality control organization, and this should help our marketing efforts on Omega," Sherwood said.

It is also a tribute to the professional competence of the division's Quality Control group, headed by Sherwood, who reports to Harold Beadle, manager of Operations.

BELGIAN AIR FORCE Quality Representatives Capt. Fernand Tutelaars left, and Maj. Jacques Vanoverschelde, right, shown with H. W. (Woody) Sherwood, center, chief, Quality Control.

COM-BUS ROUTES SCHEDULE

Existing and proposed Com-Bus routes are listed below for all interested employees. Contact bus capatins for further information.

Routes	Work Shift
West San Fernando Valley and Simi Valley Bus Captain: Jim Nemo, ext. 2754, (213) 881-7658 Assistant Bus Captain: Erna Dillard, ext. 4371, (805) 526-0896	7 a.m.-3:42 p.m.
Thousand Oaks, Malibu, Santa Monica, Route NA#7 Bus Captain: Art Jackson, ext. 1370, (213) 889-0296 Assistant Bus Captain: Bob Hodson, ext. 4804, (805) 498-4397	8 a.m.-4:42 p.m.
West San Fernando Valley, Route NA#2 Bus Captain: Jerry Peterson, ext. 4116, (213) 883-7647	8 a.m.-4:42 p.m.
North San Fernando Valley, Route NA#3 Bus Captain: L. A. Geib, ext. 4975, (213) 344-0973 Assistant Bus Captain: Don Biederman, ext. 4221, (213) 341-4438	8 a.m.-4:42 p.m.
North Orange County, Route NA#4B Bus Captain: Dick Parrish, ext. 5031, (714) 827-7081	7:30 a.m.-4:12 p.m.
North Orange County, Route NA#4 Bus Captain: Marge Bowser, ext. 5167 (714) 776-6351 Assistant Bus Captain: Dick Mosher, ext. 2471 (714) 776-7673	8 a.m.-4:42 p.m.
North Orange County, Route NA#4A Bus Captain: John Goodman, ext. 4944, (714) 828-9856	8 a.m.-4:42 p.m.
South Orange County, Route NA#1 Bus Captain: Paul Kelly, ext. 1737, (714) 557-2612 Assistant Bus Captain: Pete Carter, ext. 2633	8 a.m.-4:42 p.m.
South Orange County, Route NA#5 Bus Captain: Paul Eckroth, ext. 1465, 1477, (714) 846-1858 Assistant Bus Captain: Barbara Varner, ext. 2911	8 a.m.-4:42 p.m.
South Orange County, AP-2 Bus Captain: Bud Turner, ext. 2203, (714) 551-1594	7:30 a.m.-4:12 p.m.
South Orange County, along San Diego Freeway Bus Captain: R. R. Dudley, ext. 4741, (714) 962-1805	7 a.m.-3:42 p.m. 7:30 a.m.-4:12 p.m.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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Northrop Wins Development Contract for ECM Equipment

The Electronics Division's Defense Systems Department (DSD) received a $1 million contract from the U.S. Air Force for the design and development of an electronic countermeasures (ECM) power management system for the B-52 strategic bomber.

Under the contract, DSD will develop and fabricate a prototype of the AN/ALT-28 power management system, consisting of an airborne receiver, an interface processor and related aerospace ground equipment. The system is designed to increase the B-52's survivability against enemy defenses by automatically managing and optimizing the effective radiated power of the improved ECM jamming transmitters.

"This award is the culmination of intense electronic industry competition," W. C. Solberg, Defense Systems Department vice president and general manager, said. He added that completion of successful flight test, evaluation, and qualification is expected to result in production of several hundred power management systems for the B-52 strategic bomber fleet.

Since the mid-1950's, DSD has designed, developed, produced and supported the majority of B-52 active ECM equipment. Over 8000 transmitter systems have been delivered to USAF, mostly B-52 applications, including those aircraft deployed to Southeast Asia where enemy defenses constituted the most hostile environment ever confronted by U.S. aircraft.

Contracts Received

The Defense Systems Department, headquartered in Rolling Meadows, Ill., has received a number of contracts during the past 18 months for updating and modernizing the B-52 ECM system, Solberg said.

The Northrop department is one of the nation's leading developers and producers of radar, infrared and communications electronic countermeasures systems.

FIRST OF THREE pre-production U.S. Air Force E-3A Airborne Warning and Control System (AWACS) aircraft, equipped with Northrop hybrid navigation system, made its first flight from Renton, Wash. on Feb. 26. The Electronics Division, under contract to Boeing, integrated the navigation system which includes Northrop's Omega.

WORKSHOP SESSION at first division-wide Operations Managers Symposium includes, clockwise around table, George Downs, Harold Beadle, Walt Edwards, F. W. 'Bob' Lloyd, David N. Ferguson, Lee Engler, Doyle Rickett, Bob McLaughlin, Precision Products Department; and Lee Finstad, Northrop Dakota, Inc.

First Division-Wide Symposium Held for Operations Managers

The first division-wide Operations Managers Symposium, held Feb. 19-20 at Palos Verdes, provided a "valuable exchange of ideas among the people responsible for making our product," says Harold Beadle, meeting chairman.

The meeting was designed to increase managers' effectiveness by applying Electronics Division concepts to the operations function. The meeting established an aura of cooperation between operations managers of the various departments, said Bali Mahajan, senior industrial engineer and coordinator for the symposium.

Guest Speakers

Guest speakers included F. W. "Bob" Lloyd, corporate senior vice president, operations; David N. Ferguson, division vice president and general manager; and A. B. Lipscomb, vice president, avionics department.

Presentations were made by Beadle; George N. Downs, vice president and plant manager, Northrop Dakota, Inc.; Lee Engler, director, operations, Precision Products Department (PPD); and Doyle T. Rickett, manager, manufacturing operations, Defense Systems Department (DSD). Also appearing on the program were H. L. Janssen, manager, division relations and services department, who discussed supervision and employee relations; Walt Edwards, director, advanced technology, avionics department, who dealt with new systems and engineering; and Hank Frankenberg, who presented an overview and guidelines on finance and future outlook.

Changes Outlined In the Savings Plan

Hourly employees will participate in the Northrop Savings Plan, beginning April 1, on the same basis as salaried employees, increasing the amount most hourly employees may contribute to the plan.

Previously hourly employees contributed fixed-dollar amounts, ranging from $2 to $10 a week, while salaried participants contributed a percentage of their base salary.

The percentage is two to five percent for employees with continuous participation of less than three years, and two to eight percent for employees with three or more years participation.

Northrop makes a contribution equal to 50 percent of the amount contributed by the employee. This contribution is invested in Northrop stock. The employee's own contributions may be invested in bonds or stocks or half bonds and half stocks.

F-5E Tiger IIs Qualify for The Swiss Alpine Award

During the flight evaluation of two F-5E International Fighters by the Swiss Government in 1974, the versatile Tiger II was awarded the highly coveted Alpine Award for its successful adaptability and flawless performance amid the Swiss Alps.

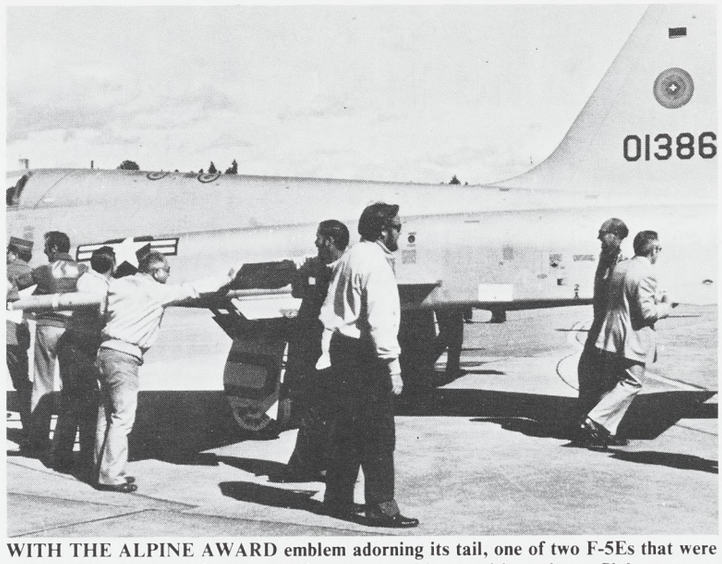
Norval K. Heath, Aircraft Division F-5 senior marketing representative for Europe, noted that although the Swiss Armed Forces do not confer any decorations or medals because an article of the Swiss Constitution forbids any citizen to accept decorations, they do confer some awards on individuals who show outstanding performance in certain skills and the necessary tests.

Awards are given for rifle shooting, gunnery performance in artillery, piloting ability, aerial observers, motor vehicle drivers, boat handling, radio operators and mountain climbing. The latter is the Alpine Award and recipients receive a special emblematic pin.

When the Swiss evaluate an aircraft for possible inclusion into their inventory, one of the critical test requirements is that it can operate under the low ceiling patterns prevalent at the mountainous airfields and at low speeds during adverse weather conditions. The approach to the runway at Meiringen Tactical Air Base, which is wedged between steep high mountains, is used as the criterion for this testing.

When an aircraft has been demonstrated to be proficient in landing at Meiringen, the Swiss award the Alpine Award for mountain climbing and the emblematic badge is painted on the tail.

Heath noted the Swiss were enthusiastic with the overall performance of the Tiger IIs during the intensive two-month evaluation which saw the agile, twin-engine F-5Es complete 60 flights from three mountainous airfields.



WITH THE ALPINE AWARD emblem adorning its tail, one of two F-5Es that were evaluated by the Swiss Government, is maneuvered into position prior to flight preparation. From left are Swiss officials Joe Peyer and Walt Spychiger, with Northrop support team members Paul Waddell, Fred Perez, Leonard Dean, Dick Case, Del Jump and Norval Heath. Not in photo are Jim King, Louis Chavez, Peter Meyer and Chuck Massey from Northrop. The F-5Es completed 60 flights from three airfields.

Northrop Credit Union Reports Increase; Names New Officers

The board of directors and officers of the Northrop Credit Union at Hawthorne, reported a 45 percent growth during 1974. Total assets exceeded $20 million, members were told at the Feb. 4 annual meeting.

Some of the actions taken by the board last year, contributing to this growth, were:

- Increased the maximum share account to $20,000 plus dividends.
- Federal Share Insurance was obtained from the National Credit Union Administration.
- Approval by the State to offer Norcredit VIP open-end credit to a maximum of $2500 — unsecured; $5000 — secured.
- Promissory Certificates — $1 million — issued with interest rates of 7 ¾ percent per annum for six months certificates and 8 percent for one year certificates.
- Group Auto Insurance program was made available to members.
- Joined the California Credit Union League.
- Wilcox Electric, Inc. in Kansas City, was included in the credit union field of membership.
- Code-A-Phone was installed to provide service for second and third shift employees.
- Published and distributed a brochure entitled "Self Defense for the California Consumer" written by William H. Waysman, assistant general counsel.
- Declared a 7 percent per annum dividend in June and a 7⅛ percent per annum dividend in December.

Elected directors were: Harvey L. Cook, L. L. Cripe, Mary B. Delaney and R. D. Hampton, Aircraft Division; R. A. Lindsey, Electronics Division; R. M. Shave, Electro-Mechanical Division; and John J. Richardson, B. M. Slotnick and William H. Waysman, corporate office. The board named Waysman, president; Shave, vice president; and Mrs. Delaney, secretary-treasurer.

The Credit Union Committee is comprised of Margaret Faubion and G. F. Kasson, Aircraft Division, and W. H. Justice Jr., Northrop Data Processing, with Kasson the chairperson.

The Supervisory Committee elected consists of H. H. Sweet, Aircraft Division; S. D. Parr, Electronics Division; A. W. Johnson, Electro-Mechanical Division; and E. R. Foord and T. A. Hruska, Northrop Data Processing, with Johnson the chairperson.

Subordinate officers named were: M. G. Peiffer and Elaine M. Pillar, assistant treasurers; W. F. Robinson, cashier; Vinnie Derus and Helen Walker, membership officers; and Mrs. Faubion, Peiffer and N. I. Thomas, loan officers.

Northrop Newsmakers

- **Merrill E. Skilling,** chief plant engineer, Electro-Mechanical Division, has been elected a member of the Anaheim Memorial Hospital Development Foundation board of trustees.

- **Dr. G. M. Andrew,** Aircraft Division, had a paper published in the January issue of AIAA Journal of Spacecraft entitled "Control and Guidance Systems with Automatic at Periodic Sampling."

- **Dr. Charles Denova,** manager of Aircraft Division industrial training, was the featured speaker at the Western Regional Conference for Society of the Plastics Industry. His topic was "Setting Up an Effective In-Plant Training Program."

- **Bill McCann,** shipping and transportation administrator, Electronics Division, is attending a special course, "Safety Training, Air Transportation of Hazardous Materials," being held in Oklahoma City by the Department of Transportation.

- **Don Anderson,** maintenance foreman, Aircraft Division, became the second person in the company to receive a 35-year service award, Feb. 14. Anderson, who spent all 35 years at the Hawthorne facility, said, "It's really been good. I owe the company a whole bunch; it owes me nothing."

- **Al Siggson and George Scott,** Aircraft Division engineers, were inducted into the Institute for the Advancement of Engineering Feb. 18, as Fellows of the Institute. Siggson, senior engineer, was nominated by the Society of Manufacturing Engineers, and Scott, avionics engineer, was nominated by the American Institute of Aeronautics and Astronautics.

- **Gwen Nadeau,** community training programs coordinator, Aircraft Division, addressed the North Orange County Regional Occupation Program board of directors, Feb. 26, speaking on the High School Involvement Program sponsored annually by the division.

- **Arthur Ingram and Lloyd Perry,** Aircraft Division, are the first volunteers from the division to address students in community schools under the 1975 Youth Motivation Task Program of Los Angeles. Ingram addressed students at John Muir Junior High School, Feb. 28, Perry spoke to students at Charles Drew Junior High School, March 4.

- **Roger Soucy,** Aircraft Division security representative, was awarded a master's degree in the business administration program by California State College, Dominguez Hills.

- **Judson LaFlash,** senior proposal engineer, Aircraft Division, has been listed in "Who's Who in the West" for the second consecutive year as well as being selected to appear in the British counterpart, "Dictionary of International Biography." LaFlash, who has a 15-year background in defense marketing, was also listed in "Who's Who In America" last year.

News From
Around the Company

New Responsibilities for Miller; George Chalmers to Head BSL

Ross F. Miller, corporate group vice president, communications and electronics, has assumed the presidency of Page Communications Engineers, Inc., with the resignation of Irving Kaufman.

In accepting Kaufman's resignation, Miller said, "It is with appreciation that we acknowledge Mr. Kaufman's services to the company and we wish him every success in his new ventures."

In another reorganization within the company, Berkeley Scientific Laboratories, Inc., was transferred from the Electronics Division to the communications and electronics group.

George Chalmers

In connection with this transfer, George C. Chalmers was appointed president of BSL and vice president and assistant to the group vice president, reporting to Miller.

Chalmers has been Electronics Division vice president and manager of financial management for the past four years having been appointed manager of the department in February 1969. Prior to that he was director of administration and control of the navigation department. He joined Northrop in 1950 as a staff assistant. He is a graduate of Stanford University where he received an A.B. in engineering and M.S. in business administration.

A. T. Migliori, vice president and general manager of BSL's Business Data Systems Division in Torrance, Calif., will report to Chalmers. H. W. Turney Jr., vice president and general manager of BSL's Medical Data Systems Division, Hayward, Calif., has resigned his position at BSL and Chalmers will assume those responsibilities along with the presidency of BSL.

World Wide Wilcox, Wilcox Electric Combine Functions

World Wide Wilcox, a subsidiary of Northrop, comprised of airport electronic systems, operations and international marketing, combined its functions with Wilcox Electric, Inc., moving from their present location in Vienna, Va., to Kansas City, Mo., Roy Kaufold, president, Wilcox Electric, Inc., has announced.

Wilcox Electric, Inc., specializes in electronic navigation aids for aviation and is a wholly owned subsidiary of Northrop.

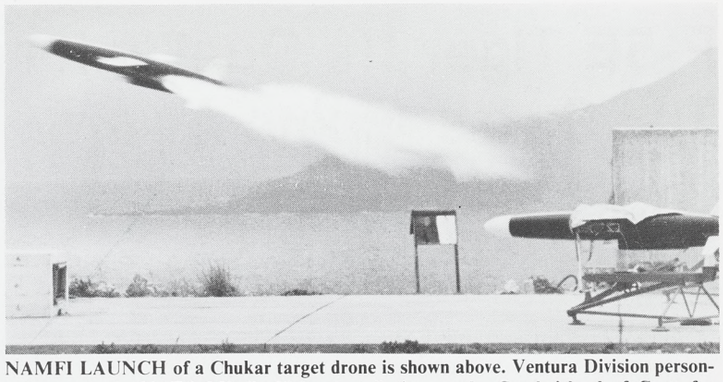
"Personnel from World Wide Wilcox joined the Kansas City staff March 1, to establish and provide the functions associated with our international business," Kaufold said.

Rome-Based Subsidiary Receives Five Communications Systems Contracts

Page Europa, S.p.A., a Rome-based subsidiary of Northrop, has received five contracts valued at $16.3 million for engineering, furnishing and installing communications systems.

Contracts from the North Atlantic Treaty Organization (NATO) were for a tropospheric-scatter communications link between Gibraltar and Portugal — $2 million; a transportable military headquarters and communications system for the Italian Ministry of Defense — $4.8 million; and switchboard units which range in size from 20 to 80 lines, will be delivered to all major NATO commands as widespread as Turkey, Norway and the United States — $1.3 million.

For the Italian firm of Compagnia Italiana Montaggi Industriali, Page Europa will perform work under a $3.2 million contract for the turn-key engineering and implementation of a telecommunications system along the Suez to Alexandria Petroleum Pipeline in Egypt, and under a $5 million pact from SNAM Progetti, an Italian construction firm, will provide the telecommunications portion of the new Iraq Strategic Crude Oil Pipeline which extends 373 miles.


NAMFI LAUNCH of a Chukar target drone is shown above. Ventura Division personnel operate the NATO Missile Firing Installation on the Greek island of Crete for various using NATO countries. Target drone was later recovered and will be flown again. R. L. Friesen is program director for Mediterranean/NAMFI Target Services.

McInnis, Barry Move Up in Major Appointments at EMD

Don A. McInnis, former vice president, operations, for the Electro-Mechanical Division, has been appointed president of Northrop Services, Inc.

Northrop Services, Inc., which operates as a subsidiary of the Electro-Mechanical Division, was formed in 1969 to provide management and technical support to government agencies and private industry.

Don McInnis

McInnis was succeeded as EMD vice president, operations, by Tom Barry, formerly deputy manager, operations, for the division. Operations is responsible for all manufacturing and material functions of the division.

McInnis has been with Northrop since 1952. He served progressively from project tool engineer, supervisor of manufacturing planning, chief of manufacturing operations, director of ordnance manufacturing and vice president, operations.

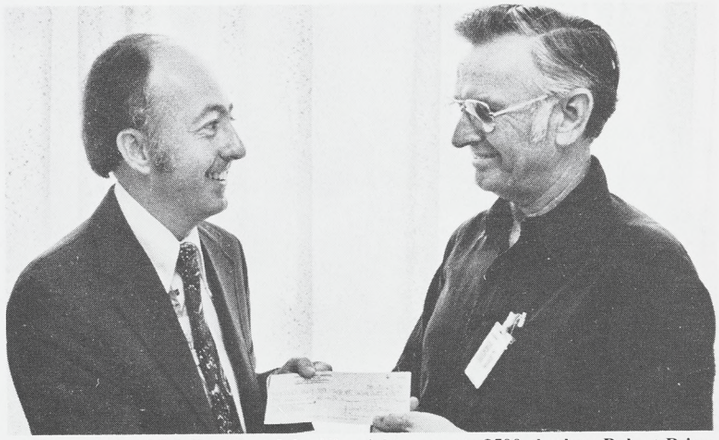
McInnis is a registered professional engineer and one of the founders of the local chapter of the Society of Manufacturing Engineers.

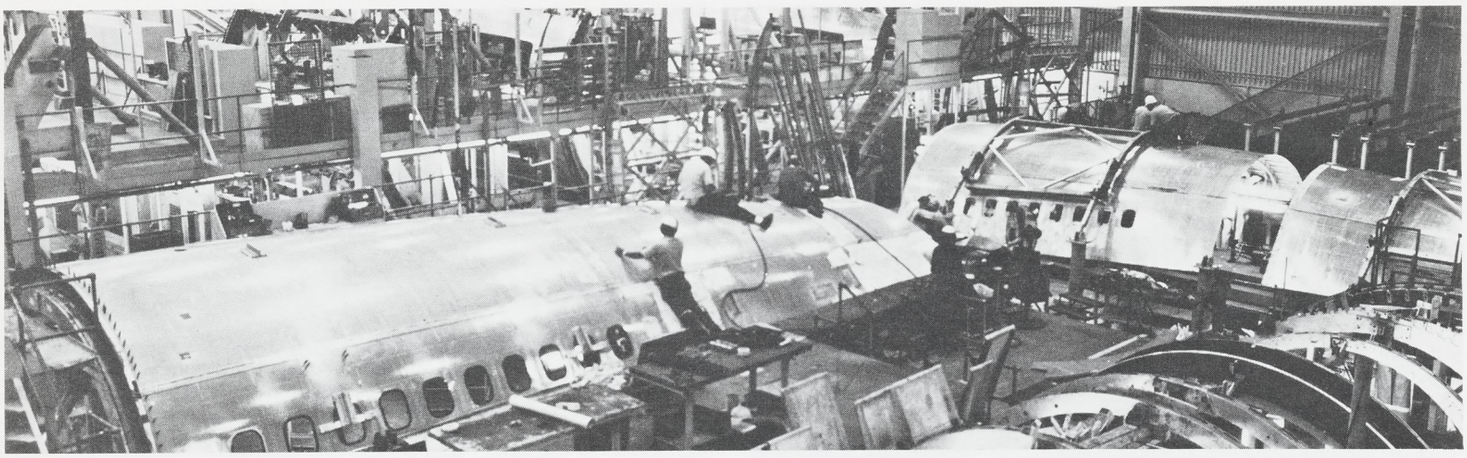
Barry joined Northrop in 1960. His previous assignments have included manager, manufacturing and methods engineering; program manager, TEAMS and ULMS programs; chief, engineering advance planning, and other supervisory engineering positions.

Tom Barry

William J. Oakes, NSI vice president, will continue in his present position, concentrating his attention to marketing for the company.

During the six years of Northrop Services, Inc.'s operations, support service sales more than doubled while the number of employees increased from 500 to more than 1000 now with the company.


DOLLAR DONORS President John Via, right, presents $500 check to Robert Prieve for the Southeast Ventura County YMCA. Prieve, Dollar Donors treasurer and a member of the YMCA, accepted for that organization. The donation is one of many.

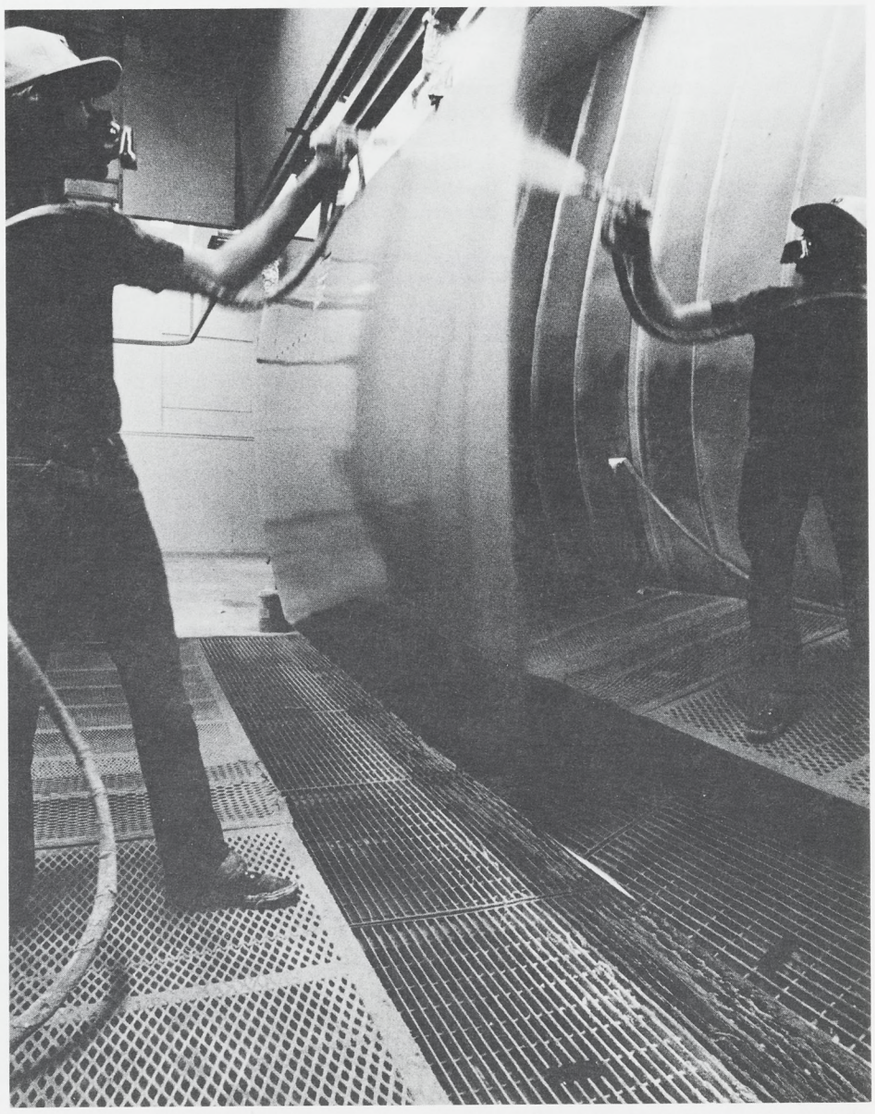


AIRCRAFT DIVISION production team members, above, complete skin panel installation on upper bonnet for sections for a basic 747, left, and new 747SP, right. Each Northrop-produced shipset consists of 27 panels for the basic 747, and 17 panels for the 747SP, which is 47 feet shorter. Below, laminating a fiberglass panel for the wing-to-body fairing used on the Boeing 747SP at the Ventura Division is Norma Vasquez.

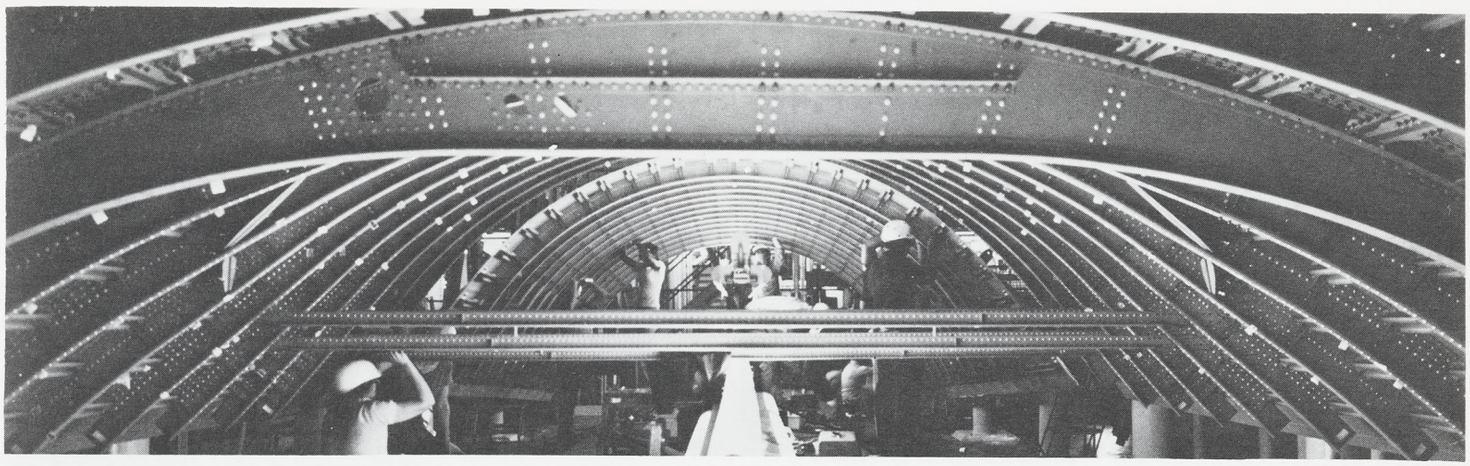
Northrop Team Supports 7

Northrop has been a major subcontractor to Boeing programs from the B-17 of war years through the present 707, KC-135, and the present-day 747 production program.

When the first Boeing 747SP (Special Performance) airliner makes its initial test flight this summer, it will represent the eighth commercial derivative of the 747 superjet line to be produced.



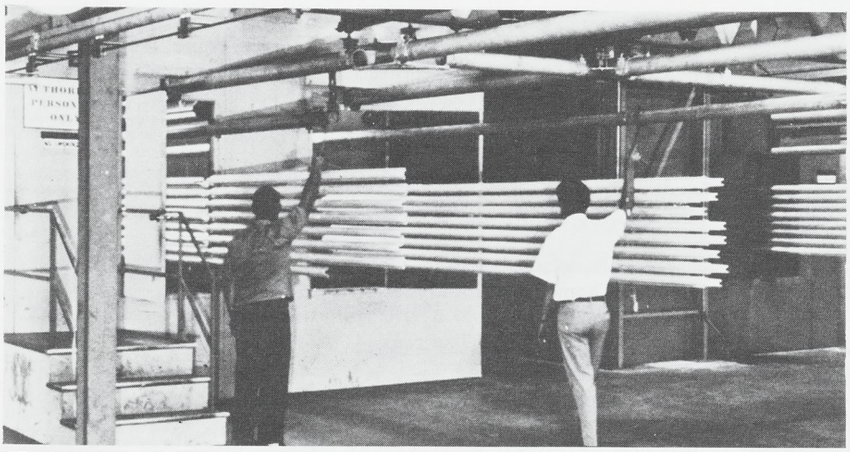
DAVID ALLEN, AIRCRAFT DIVISION, sprays protective coating on aluminum skin panel for protection during assembly operation. Approximately 1600 personnel support the 747 assembly area.



ts 747 Superjet Production

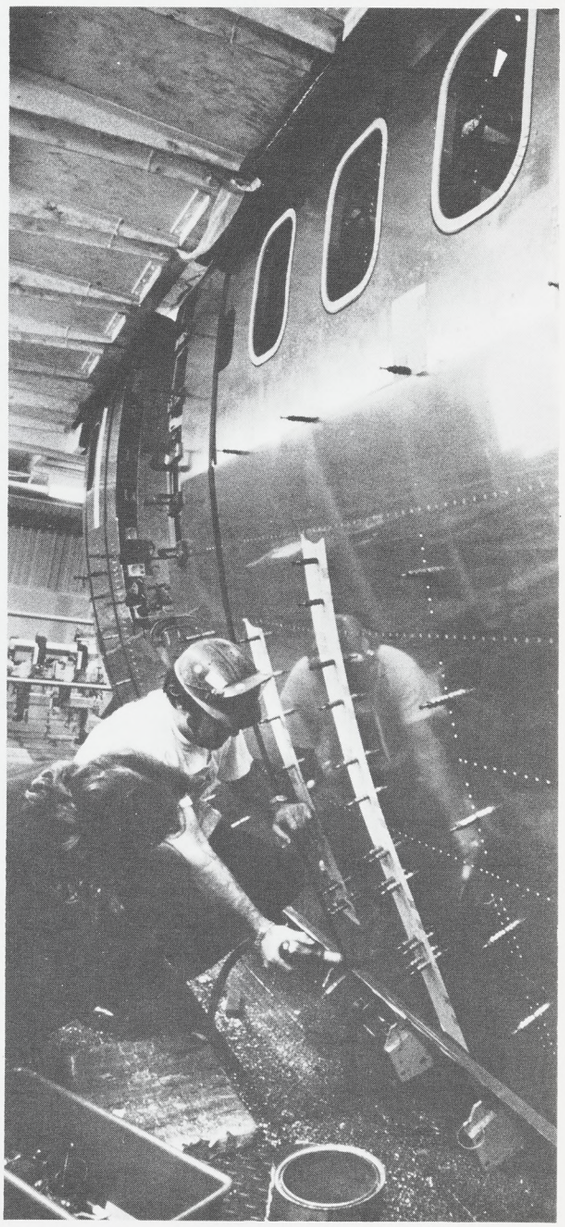
Northrop support to the 747 includes work from the Aircraft, Ventura, and Electro-Mechanical Divisions, and Northrop Pacific, Inc., Long Beach. This team effort produces the main fuselage sections, floor panels, support posts, stringers, and stringer clips, and wing-to-body fairings for every 747.

Pictured here are just some of the activities around Northrop that go into the 747 production program.



TEAMWORK AT THE Electro-Mechanical Division has provided quality assemblies during the 747 production program. Above, stringers — the horizontal fuselage supports — move on assembly line through a dye penetrant inspection chamber where they are checked for minute flaws. Below, production teamwork at Northrop Pacific, Inc., Long Beach, results in fabrication of floor panels, floor support posts and stringer clips. Preparing panels for painting are from left, Maria Moreno, Thelma Cooney, and Olean Bowie. Pilar Alvarez is in the paint booth in the background.

PRODUCING THE main fuselage section for every 747 superjet is the job of the Aircraft Division. Above, forward upper bonnet sections totally engross production team members during pick up work phase of assembly, while below, mechanics prepare to rivet skin panel to left-hand side entry door section for a 747SP. The Aircraft Division has delivered 263 complete basic 747 shipsets and two 747SP shipsets to The Boeing Company.



Dot Wood And Midge Flint Earn Safe-Driving Awards

Two women courier drivers from transportation services, Aircraft Division, have received recognition from the National Safety Council (NSC) for their accident-free driving performance.

Dorothea "Dot" Wood has been awarded membership into NSC's prestigious Two Million Mile Club and Midge Flint was named to the Million Mile Club.

Dot was the first woman ever to be admitted to lifetime membership when she reached her million mile mark in 1973.

When asked what the secrets of her successful driving record were, Dot's answer was the same as it was when she received her Million Mile Club membership and that was: "Defensive driving, excellent vehicle maintenance and divine protection from all the male drivers on the road."

Midge credits her success to the fact that she has always enjoyed driving. "When my father found out about my job at Northrop, he was glad to see I had finally found a solution to my gas fever," she said.

Membership in this international honor society is limited to those professional drivers who have driven more than one million miles, or 25,000 hours, without a preventable accident. The Two Million Mile Club is made up of previous Million Mile Club qualifiers and requires over two million miles, or 50,000 hours of preventable accident-free driving.

A bus driver in Canada is the only other woman to achieve membership in NSC's international society since its inception in 1913.

Dot has been driving as a courier for 28 years and Midge is in her 20th year behind the wheel for Northrop.

The elite women average up to 200 miles a day covering a 400-mile radius from the facility. They deliver letters, documents, parts, baggage and VIPs — all with the same high degree of reliability and safety.

In addition to receiving handsome walnut and bronze engraved plaques, the women's names and organizations were entered on a permanent Roll of Honor at the National Safety Council headquarters.

STARTING OUT ON their daily courier routes from the Aircraft Division, are Dot Wood, above, the two-million-mile driver, and Midge Flint, below, the one-million-mile driver. They average up to 200 miles a day covering a 400-mile radius.

TWIN-ENGINE RELIABILITY was demonstrated when the right engine of this Northrop-built F-5 sustained a direct hit from a surface-to-air missile during tactical sorties. Loss of the engine failed to prevent this South Vietnamese Air Force pilot from returning safely to his home air base — more than 50 miles away.

Recreation Notes

Tickets are now on sale for the traditional Northrop Night at Disneyland which is scheduled for May 17.

The park will be open exclusively for Northrop employees and their families at all divisions and subsidiaries from 8:30 p.m. to 1:30 a.m. Unlimited use of Disneyland's more than 50 major attractions — except shooting galleries — await party-goers.

The $4.75 tickets may be purchased at personnel activities offices. No tickets will be sold at the gate.

★ ★ ★

NRC Travel Club has scheduled two exciting trips. A Las Vegas DeLuxe Champagne Holiday, April 25-27 at a price of $52 which includes many extras, and a river raft trip down the Grand Canyon, June 8-14. Price is $452.40.

★ ★ ★

The Northrop Retirement Club will hold its annual dinner at the Western Avenue Country Club, May 21. The affair will start at 3 p.m. Members may call Robert W. Feeny, vice president of the club, at 213-322-7769 for tickets.

DEFENDING CHAMPION Electro-Mechanical Division basketball team members busily polish champion's perpetual trophy which will be up for grabs in the third annual All-Northrop Basketball Tournament beginning the week of April 21. The tournament will feature squads from Ventura, Aircraft, Electronics, Electro-Mechanical Divisions, Palmdale, and corporate office. From left are Mike Rowe, Duane Baptiste, Lonnie Griffin and Ron Rivera. Check bulletin boards for game times and pairings.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Model A Coupe, 1930, disassembled, eng. reblt., $1800. 805-942-4433.

Chrysler, 1968 Town-Country wagon, 3-seat, many extras, $575. 714-635-2539.

Dodge, 1963, Siesta 8½' Cab-O tel-scope camper, $1395. 714-898-1517.

Datsun, 1970 wagon, AM/FM stereo, many extras, $1600. 714-633-5826.

Chevrolet, 1967 Impala, needs muffler, seat covers, $200. 213-644-3957.

Toyota, 1969 Corolla, 63,000 mi., $400. 213-325-8267.

Porsche, 1966 912, 5-spd., elec. sunroof, $3900. 213-548-3552.

Ford, 1967 Ranger, ¾-ton pickup w/camper, $1600. 213-373-4455.

Maverick, 1970, auto., air, 54,000 mi., $1550. 213-860-8746.

Datsun, 1972 620 pickup, extras, AM/FM stereo radio, $2000. 213-376-5455.

Vega GT, 1973 Hatch Back, 2-dr., 4-spd., 26,000 mi., $2200. 213-370-9033.

Datsun, 1969 soft top Roadster, 46,000 orig. mi., new top & seats, $1250. 213-973-2701.

Ford, 1954, pickup truck, 292 V-8, 3-spd. trans. w/ overdrive, $650. 714-893-0414.

Motorcycle, Triumph 1970, 650 cc, ext. front end., customized, $975. 213-670-5067.

Motorcycle, 1970 Harley Davidson Sportster, $1700. 213-375-7303.

El Camino, 1974, 3500 mi., auto., air, full power, 350 V-8, $4500. 213-371-1438.

Motorcycle, 1973 Penton, 125cc, $600. 213-675-4306.

Motorcycle, 1968 Triumph Tiger 650, rigid frame, cust. chopper, $1850. 714-529-7091.

Motorcycle, 1974 Yamaha, 250 Endura, 2300 mi., $1000. 213-676-9772.

Camaro, 1968, 327 V-8, air, auto. trans., p/s, p/b, r/h, extras, $1495. 213-831-9636.

T-Bird, 1962, orig. owner, 72,000 mi., p/seats, p/windows, p/s, p/b, $550. 213-644-3922.

Chevrolet, 1965 van, $800; Corvair dune buggy, needs work, tow bar, $400. 213-973-8743.

Volkswagen, 1974 912 station wagon, 15,000 mi., AM/FM radio, a/c, $3700. 213-545-0732.

Volkswagen, 1968, $925. 213-476-1842.

Datsun, 1971 pickup 1600, $1600. 714-994-1138.

Cadillac, 1966 Sedan DeVille, air & power equipment, $1100. 213-645-4163.

Opel 1900, 1971 Sta. Wgn., 4-spd., $1500. 213-548-4621.

Camaro, 1969, 4-spd., minimum bid, $1000. Credit Union, ext. 1137.

Miscellaneous For Sale

Engine, 1964 Dodge, reblt. 383 & trans., $200. 213-324-1060.

Wardrobe Trunks, 2 lge. steamer-type, $65 ea.; refrigerator, lge. frost-free Westinghouse, sgle, dr., coppertone, $55; oven & rotisserie, bltin-type, $25. 213-325-7806.

Hospital Bed, fully operative, near new, $125; mattress, $25. 714-879-1325.

Stereo Console, 12-spkr. sys, Garrard changer, AM/FM, 8 track, headphones, enc. bar, $150. 213-530-8928.

Bedroom Suite, walnut, 6-drwr. low chest, 4-panel mirrors, dble. bed, innerspring mattress, box springs, Hollywood headbd., $200; bowling balls, $5. 213-295-9997.

Wheels, 4 Cragar Screamer, polished w/hubcaps & lugs, 4¾" hole pattern, fit GM products, $180. 213-320-7865.

Chord Organ, Silvertone, 30 chords, walnut, $95; bench, $20. 213-430-8581.

Golf Irons, med. 2, 3, 4, 5, 6 & 8, Spaulding Executive Top-Flites, syncro-dyned, $50. 213-923-9957.

Miscellaneous For Sale

Water Softener, Sears, $125; bar stools, 3, maple, $23 ea.; dishwasher, G.E. portable, $115. 213-833-3954.

Skis, K2 J-TWO 160 cm w/Solomon 444 bindings, $70; ski boots, Nordica, ladies Astral Mercury, size 6N, $50. 213-377-9719.

Membership to Jack LaLane Health Spa, 4-yr., $250. 213-324-0792.

Crib, white Babyline, 3-drwr; chest, $100. 213-545-4403.

Clock Radio, AM/FM 2 spkrs. wake-to-music control, $15. 213-973-0457.

Waterbed, complete king size, incl. heater, $150; couch & love seat, red velvet, $175. 213-973-5183.

Dog House, wood w/shake roof, med. large, $5. 213-379-9836.

Pups, Collie, AKC, $100-$200; telephoto lens, 85-210 zoom, pistol grip, sun shade, $75. 213-530-2710.

Bicycle, boy's 24" 10-spd. Schwinn, near new, light, gen., speedometer, $75. 213-530-6568.

Tires & wheels, 4 600/13, for Pinto, $8 ea. 213-675-7316.

Sailboat, 15' Finn, full rigging, hoisting sling, trailer w/spare whl. & tire, $595. 213-374-4780, 213-375-8968.

Drafting Machine, Bruning, long arm, model 2699 PG, $50. 213-326-9354.

Volkswagen Parts, 1962 eng., $75; doors, $25 ea; seats, frt. & rear, $10 ea; misc. 213-831-9589.

Cemetery Plot, Valhalla, single, lot 6 sec. 3103, block D, $250. 213-281-4954.

Camera, miniature 8mm Yashica, minox size, flash attach., filters, storage, carrying case, $45. 805-495-5967.

Metal Detector, White's Coinmaster IV, $125. 213-787-6332.

Water Softener/Conditioner, $100; stove, gas, $50; power mower, reel-type, $10. 714-956-0464.

Bicycle, 20" girl's hi-rise, 3-spd., $40. 213-326-7316.

Wheels, 8 x 14" U.S. Indy, w/G-60 series tires, $25 ea.; 2 10 x 14" U.S. Indy w/L-60 series tires, $50 ea. 213-324-3625.

Umbrella Tent, Coleman, 9x9 $25; cots, 2, $4; catalytic heater, lge. Coleman, $25. 213-376-5455.

Drapes, flr. to ceiling, approx. 18 panels, beige, $125. 213-370-5902.

Grave Sites, 3-4 Lot No. 4307, Willow Lawn, Rose Hills, $650. 213-674-0589.

Calculator, T.I. Datamath II, $36. 213-374-7022.

Refrigerator, $80. 213-376-5096.

Tonneau Cover for 1974 Mazda pickup, deluxe model, $25. 213-374-2915.

Phone Answer Machine, $75. 213-679-6354.

Whaleboat, 26', fibreglass hull, 35-h.p. diesel, $3000; organ, Sears C&G chord, 4-rhythm unit, $95; sailboat, 26' Seabird, 8 h.p. diesel inbd., steering vane, RDF, $3900. 213-320-8297.

Pups, Pekingese, AKC, reg., 4 male & 2 female, black or tan, $75 - $200. 213-697-0769.

Kitchen Set, 8 chairs, w/new table, still in box, brown leather, $150. 213-679-0543.

Record Player, 1972 GE portable, stereo, $30. 213-831-6567.

Bicycle, girl's Spyder Schwinn, $30; record player console & G.E. stereo, 45" long, $50. 213-325-1982.

Ski Boots, men's size 11 Raichle Jaguar, worn twice, $25. 213-376-2575.

Camper Shell, insul., w/boat rack, 8', $245. 805-498-2336.

Hair Setters, Presto Mist, 2, w/24 various size rollers, $15; Lady Schick Mist, w/20 various size rollers, $15. 213-676-9852.

Stenotype Machine, 1974 w/stand, $200. 213-479-5814.

Fan. Koldaire 3-spd., $12; aquarium, gal. size, complete, $60; awning for camper, $20. 213-675-6020.

Tables, round, maple, coffee, $10; maple, end, $5; 2-tier end, $5. 213-376-4831.

Dryer, elec., $25; rifle, 7.62mm Russ; $25; golf clubs, l.h., $10. 213-830-4968.

Bicycle, Schwinn boy's hvy. duty, 25" wheels, $20. 213-323-8089.

Dining Room Set, 5-pc. Drexel Pavilion, $150. 213-395-4801.

"THE CARDS ARE IN YOUR FAVOR," beams Gayle Hayes, personnel activities clerk, Aircraft Division, as Alan Larson, senior engineer, and Shirley Feenstra, process analyst, survey just a sampling of some of the discount cards available to all employees.

Personnel Activities Is Still A Bargain for Bargain Hunting

Seeking inflation-beating bargains? Try personnel activities at any Northrop division before spending your money. You may be able to save on anything from panty hose and golf shoes, to coffeemakers, or even a night on the town.

Some of these bargains may be on sale as a convenience at the divisions, but most savings are obtained through the many discount cards and offers which various companies issue through their industrial discount programs.

"These cards are available in all division personnel activities offices," Duane Baptiste, Electro-Mechanical Division, said. "But what is available will vary from place to place, according to what local merchants want to offer. Also some items and offers are available only at certain times."

Many items, like tires, automobile referral discounts, Disneyland Magic Kingdom key books and the like, are available the year around. Others, like See's Candies, sporting events and expositions, provide industrial discount cards and tickets only on a seasonable basis. The candy is usually available during special holiday seasons such as Easter, Mother's Day, Christmas and Valentine's Day.

"These offers come and go," Marie Tully, Aircraft Division, pointed out. "Like all bargain offers you have to watch for them. In the recent past, we have had discounts on jewelry, car service coupons, a recreational vehicle show, camera show and a Let's Dine Out offer that cuts the price of having a meal at 59 restaurants in the Los Angeles area."

Del Wyatt, Electronics Division, says that on a trial basis, prime beef will be offered under the United States of America label at the Hawthorne and Palos Verdes offices.

"With the vacation season starting soon, it is a good idea to stop by personnel activities offices at the Ventura Division in the Administration, Manufacturing and Engineering Buildings, to obtain currently available discount membership cards for the many activities and entertainment in the area," said Marian Robinson.

Wanted To Buy

Sailboat, Sabot, mast, sail & oar locks. 213-377-4180.

Stepping Stones, rectangular, all colors, all sizes. 213-372-5508.

Doghouse, large, in good condition. 213-675-0128.

Winch, for Jeep, w/6 v. elec. motor drive or one which can be driven from power take-off, or one with min. of 80-1 gear reduction. 213-329-4090.

Piano, older one OK. 714-956-7838.

Military Souvenir, World War II German & Japanese for private collection. 213-375-4312.

Boat, 13' to 16', aluminum. 213-676-5921.

For Trade

Radial Saw, Sears, trade for table saw. 213-371-1526.

Rentals Wanted

Piano, portable or elec., need to use for 2 months. 213-676-3050.

Personals

Our heartfelt thanks for the flowers, cards & other expressions of sympathy at the loss of our husband & father, Roy Lloyd. MRS. HELEN LLOYD & JUDY.

To all of Fred's friends at Northrop, my sincere thanks for the flowers, cards & contributions to the Heart Fund. RUTH LINDQUIST.

Thanks to all our friends at Northrop for the great party & gifts. We miss you. JIM & HELEN QUICK.

My sincere thanks & appreciation to my many friends & fellow employees at Northrop for the flowers and expressions of sympathy during our time of sorrow. D. A. NICCOLE & FAMILY.

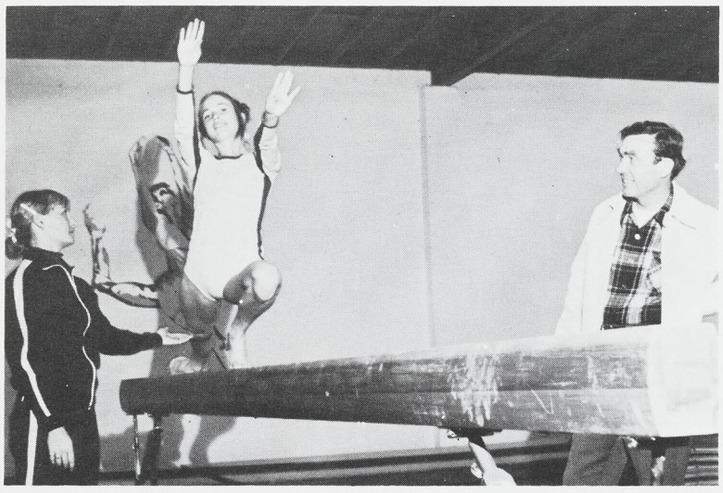
My sincere thanks to all my friends at Northrop for the flowers, cards & expressions of sympathy at the loss of my father. VIRGINIA ABELL & FAMILY.

Free

Perculator, 80-cup, auto. 213-370-3209.

Ride Offered, Wanted

Carpool from Canoga Park, Woodland Hills area, 7 a.m.-3:42 p.m., Aircraft Div. ext. 2242, 213-347-4200.



ANNE LYNCH, 15-year-old daughter of Jim Lynch, program manager, advanced development department, practices maneuver on balance beam under watchful eye of her coach, former Olympic team member Wendy Cluff and her father.

Future Gymnastic Star Encouraged by Father

When 20-year-old Olga Korbut of the Soviet Union electrified audiences at the 1972 Olympic Games, women's gymnastics came into its own as a competitive sport and, to many, as an art form.

A ways off from helping the U.S. team compete in worldwide competition, but just possibly good enough, someday, is Anne Lynch, 15-year-old daughter of Jim Lynch, program manager, advanced development department, Palos Verdes.

Jim has found a fascinating hobby in helping set up competitive meets, as part of a parents booster club, which makes it possible for talented youngsters to develop the skill needed for Olympic competition.

Jim has high hopes for his daughter's potential. While it will be another year before she enters the Class I competition, she is this year at the top of the Class II and has received a number of trophies and awards.

"This isn't high school competition," Jim says. "These are independent, non-profit clubs. Only the very best high school gymnasts can make them."

Leads to Olympics

Competition in the Elite Class, which follows Class I, leads to the Olympics. The winners in the meet he helped set up at Lawndale will compete in the state finals, with top performers then going on to the Nationals in two months. Winners there will have a good shot at the trials for the 1976 women's gymnastics team.

Anne is one of 30 girls on the South Bay Gym-I-Niks, coached by 22-year-old Wendy Cluff, a U.S. Olympic team member at Mexico City in 1968. Wendy is also part owner of Gymnastics International, Torrance, where she instructs.

Jim and his wife, Norma, have 10 children and have been quite involved in various sports.

"Women's gymnastics has literally exploded," he says. "I think it's outstanding for young women because it conditions both the mind and body, and it teaches grace. It's like ballet. It also teaches sharing, being part of a team."

Has the Attributes

Anne's coach thinks she has the attributes to be successful. "She has a lot of potential to be very good," says Wendy Cluff.

What does Anne think? "I don't know," she shrugs after executing a perfect maneuver on the uneven bars with the grace and precision of a champion. "I may try for the nationals in 1978. I'll just keep working as long as I feel like it."

If Anne feels like it, she, and her father, might just be making a trip to the Olympics in 1980.

SERVICE AWARDS

Billy J. Roach, Samuel G. Wall, and Charles Waller, Electronics Division, Hawthorne, head the list of service awards for February and March by celebrating their 25th year with Northrop.

Others observing service awards are: 20 years — Sophie Adams, Minnie Stillwell, John Groves, Raymond Konvick and Richard Crilly, Hawthorne.

Fifteen years — Jesse Gillies, Peter Brooks, Theodore Edmands, and Farrell McCann, Hawthorne; Ronald Howard, William Hale, and Martin Folan, Palos Verdes.

Worldwide Omega Group Established

An International Omega Association, designed to promote the Omega navigation system on an international scale, has been formed with good response from those interested in membership, relates Fred Lackner, association secretary.

Lackner, manager, avionics product marketing, says membership is continuing to be solicited from interested individuals in industry and government.

At a meeting in Washington, D.C. in February, a steering committee was formed with a tentative slate of officers elected. A general membership meeting is planned for this summer, probably in July, Lackner said.

Association Goals

Goals of the organization include: promotion of worldwide use of the Omega system and release of information on Omega status; development of an internal forum for exchange of ideas; promotion of system standardization and specifications; enlisting ARINC cooperation; and providing articles and technical briefings to scientific organizations for dissemination.

Officers, tentatively elected are: Irv Lublin, NAVAIR, president; Tom Angelos, United Airlines, vice president; Lackner, secretary. Committees formed and chairmen include: Publicity and Membership, Hal Gershanoff, EPSCO, Inc; Nominations, Lackner, Northrop; Constitution and Bylaws, H. R. Walcott, Bendix; Name and Symbol, Graham Gibbs, Canadian Marconi; and Legal Consultant, Lackner.

Status reports will be issued to those indicating interest, and membership applications and draft of bylaws will be sent following an April 2 meeting of the steering committee, Lackner said.

Those interested in membership may clip out and mail the following to Mary Lawson, A60, A4930:

Name _____
Title _____
Organization _____
Zone _____ Ext. _____

Ski Club Leads NRC In Size

Northrop Ski Club, now the largest of the NRC Clubs, with a membership of 149, will hold a drawing for a free ski trip at its March 27 meeting at Lococo's Restaurant, 8 p.m. The free trip is tentatively scheduled for the club's April 25-27 trip to Mammoth Mountain, one of three remaining weekend jaunts of the season: April 4-6, June Mountain; April 25-27, Mammoth; and May 9-11, Mammoth.

The club draws its membership from the Aircraft Division, Electronics Division, Electro-Mechanical Division and corporate offices.

Ski trips include bus transportation, two nights' lodging, refreshments on the bus and shuttle services to and from the ski lifts. Members pay $38 per person and non-members $45.

"Ski Club members are looking forward to excellent snow conditions at June and Mammoth throughout the remainder of the season," says Commissioner Terry Dickson. "We will also be planning a variety of club activities during the summer."

Ski Trip Drawing

For information on the ski trip drawing and other club activities, contact Terry at the Electronics Division, Hawthorne, ext. 2242, or Gayle Stromberg, Aircraft Division, ext. 1955.

NRC SKI CLUB members head for the slopes at June Mountain ski area during trip in early March. Ski Club has become one of the most popular NRC activities.

Secretaries Play Key Role in Electronics Division

The week of April 20-26 has been designated National Secretaries Week and April 23 National Secretaries Day by proclamation of the President.

Northrop News took the occasion to talk to some secretaries in the Electronics Division about their jobs. The reporter came away convinced that the company could not function without them. And besides, they make working a lot more pleasant.

Here is how four of our division's many capable and talented secretaries feel about their jobs:

Anne Purnell, left above, secretary to Ken Schiefer, chief, Major Subcontracts, Hawthorne: "I feel that the group I work for, and my boss in particular, is very important to Northrop. This is a very good company to work for — its benefits are better than any I've seen."

Anne joined Northrop as a substitute secretary in May 1974, and then "changed my mind and decided to stay," taking a permanent position last July. She learned secretarial skills in high school, and continues to attend college.

Sheila Bondi, second from left, secretary to Bob Whitman, manager, Avionics Engineering Department, Hawthorne: "I like to be a part of the whole team . . . to donate and participate in the effort, such as winning a contract."

Sheila came to work for Northrop in 1962 as a typist. She says Northrop looks for and promotes people who "are conscientious and responsible and care about their jobs. The opportunity is here."

Shirley Carmen, secretary to George Fritzel, manager, MX Program office, Palos Verdes, third from left: "For someone who was going to work two months and quit, I've been here a long time," she laughs. "It was eight years with Northrop on April 10.

"I think we're part of a team," Shirley says. "They need us, and we participate. Northrop will listen to you. They look after their people. They really try."

June Boyle, right, secretary to David N. Ferguson, corporate vice president and division general manager, in secretarial ranks, first lady of the division:

"I take as much pressure off the vice president and general manager as I can. I do whatever I can to ease his workload, or make time for him, so he can have more time for decision making.

"I've been involved with the company for a number of years and have always known that Northrop is a "wonderful place to work." June has been with Northrop for 13 years.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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Affirmative Action Stressed In Division Outline for Year

Continuing and increased emphasis on the employment, promotion and transfer of minority and women employees is being stressed by the Electronics Division in the 1975 Affirmative Action Plan developed by the division.

"We will continue to take aggressive steps to increase the utilization of ethnic minorities and women at all job levels and all segments of the work force," David N. Ferguson, corporate vice president and division general manager, said.

Ferguson stressed that it has been, and will continue to be, the Electronics Division's management policy to implement Affirmative Action procedures to achieve equal opportunity for all without regard to race, religion, national origin, sex or age.

Plan Approved

The division's 1975 Affirmative Action Plan recently was approved by the Federal Office of Contracts Compliance.

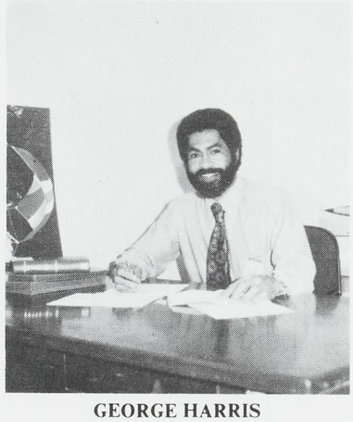
George Harris, chief, Employee Relations and Services Group, noted that the Electronics Division has made "significant progress in achieving Affirmative Action goals, particularly in light of current business conditions. However," he said, "the government is stressing that it is even more important now to maintain an affirmative posture in the utilization of women and minority employees."

This is due in part, Harris said, to the fact that the Affirmative Action Program, as required by Federal Order Number 4, has been in effect since 1970.

Responsibilities

Harris has responsibility for administering the Electronics Division's Affirmative Action Program, along with other duties. A recent addition to the Employee Relations Group, to assist in the Affirmative Action Program and other areas, is Patricia Partida.

The Affirmative Action Program outline includes policy, method of communication, established responsibilities, identifying problem areas, setting goals and timetables for correction, action oriented programs for implementation, audit and reporting system, support of community programs, and support of minority business enterprises.



GEORGE HARRIS

Tourney Hosts

The Electronics Division plays host to the Third Annual All-Northrop Basketball Tournament April 21, 22 and 26, Vic Huang, host commissioner, reports.

Six teams — representing the Corporate offices, Palmdale, Aircraft, Electronics, Ventura, and Electro-Mechanical Divisions will compete in the elimination tournament. First two night's games are being held at Rogers Park, Inglewood. Games on April 26 are at Hawthorne High School, followed by awards. **(See pairings page 6.)**

AIDATS Tests Exceed Range

Development testing of the Electronics Division's Army In-flight Data Transmission System (AIDATS), currently being conducted by the Army at Ft. Huachuca, Ariz., has successfully demonstrated data transmission capability "beyond specified range," Art Gandy, program manager, said.

Gandy noted that tests by the Army, with military and civilian personnel, transmitted imagery up to 140 nautical miles. System specifications call for 81 nautical miles.

The Army is now entering the imagery phase of testing — where targets displayed on the reconstituted film, transmitted by the AIDATS data link, are compared with airborne film taken at the same time. Development tests, designed to determine technical proficiency of the system, will be followed by operational tests, where the Army will test the system under field conditions, Gandy said.

Bob Cooper, project engineer, explained that Northrop's role in the testing is to support the Army maintenance-wise and provide any other assistance they request. Northrop personnel based at Ft. Huachaca include Al Gareffa, Chuck Fuller, Don Schultz, and Sam LaLande.

May 1 Marks Start of the Savings Bond Campaign

A systematic way to save money painlessly still exists in these times of rising costs and recessionary trends in the economy — the payroll savings plan for buying U.S. Savings Bonds.

And to make employees more aware of the advantages of buying and holding Savings Bonds, Northrop has designated the month of May as its annual Savings Bond Drive throughout all facilities of the Southern California operations.

During this month-long campaign, a team of division bond coordinators headed by R. J. "Dave" Davidson, corporate director, Administrative Services, will distribute informative material to all employees outlining the advantages of Savings Bonds and, with the assistance of bond representatives from every organization, will offer persons not participating a chance to sign up for the payroll savings plan as well as encourage those who are participating to increase their payroll deductions for bonds.

Northrop is currently 10th among aerospace companies in total Savings Bonds participation, Davidson reported, with 66 per cent of all employees signed up. The Ventura Division, with 82 per cent participation from its employees, heads all other operations.

"Through the payroll savings plan," notes Jack H. Bruce, corporate vice president, Industrial Relations, "employees have a way of establishing a secure family savings plan in the form of Series E Bonds. In addition, the government and nation at large benefit from the ongoing flow of these stable, non-inflationary funds."

Series E Bonds earn six per cent interest when held to maturity of five years and are not subject to local or state income tax. The federal tax can be deferred until after retirement when most people reach a lower tax bracket. Bonds are easily replaced if stolen or destroyed at no cost to the holder and can be cashed in at full purchase price, plus interest, after two months.

Take stock in America and your own financial future by signing up for, or increasing your payroll savings deduction for U.S. Savings Bonds.

NSI Huntsville Reduces Energy Consumption

Northrop Services, Inc.'s Huntsville operations has reduced energy consumption 27 per cent since the beginning of the energy crisis.

J. A. Barclay, manager of NSI-Huntsville, said his organization was using 144,300 kilowatt hours of electricity in September 1973, and that this had been reduced to 49,500 for January 1975.

"It is quite remarkable," Barclay said, "that we were able to affect electric energy savings of more than 40 per cent during the past months of December and January, which are normally the coldest months of the year.

GETTING READY for the annual U.S. Savings Bond Drive are three Ventura Division employees. At left, Warren Sparks, Ventura Division Bond Drive chairman, displays how bonds grow in value as Bob Jennings and Linda Hawk lend their support.

Northrop Newsmakers

• **Larry L. Loo,** quality control engineer, Aircraft Division, received his master of science degree in operations management from Northrop Institute of Technology with the help of the Northrop Educational Refund Plan.

• **Langston Gillum** has been appointed Equal Opportunity coordinator for Northrop-Houston, a unit of Northrop Services, Inc.

• **B. T. Moser,** vice president, F-5 Production, and **Dan O'Halloran,** manager, International Programs, Quality Control, Aircraft Division, have conducted educational seminars in conjunction with the Executive Program Association at UCLA entitled "Managing in a Mismanaged Economy."

• **John Burke,** manager, Plant Protection and Security, Electro-Mechanical Division, has been appointed chairman of the Garden Grove Bicentennial Commission. The commission will plan the city's observation of the 200th anniversary of the nation.

• **Ron Wyatt,** manufacturing manager, Northrop Palmdale, was the principal speaker at the April 14 meeting of the Lancaster Lions Club. Wyatt discussed Northrop operations in the Antelope Valley and showed the film "Talons for the Thunderbirds."

• **Lore Krumreich,** Electronics Division, was named to a Compton College Cluster Meeting task force. The College Cluster Program, in affiliation with the National Alliance of Businessmen, assists graduates of developing institutions.

• **Carl Childers, Joe Norse, Jerry French, Bob Flores** and **Dale Fox,** represented Northrop Architectural Systems at the National Glass Dealers Association in Las Vegas.

• **James M. Brust, Gene H. Hauser, Nils P. Kolderup, Philip Schneider, Robert B. Whitman,** and **Frederick W. Woods,** Electronics Division, and **August Quenon,** Ventura Division, recently completed the Management Policy Institute course of study at the University of Southern California's Graduate School of Business.

• **Richard Chavez,** Industrial Relations representative, Ventura Division, discussed employment and educational opportunities within the Northrop Corporation at a career guidance class at Newbury Park High School.

• **Gary Bucsis,** manager, Engineering Administration, Ventura Division, has been named representative to the Ventura County United Fund.

• **Dr. V. W. Howard,** vice president, Engineering, and **J. W. Brochu,** senior customer requirements representative, Ventura Division, attended a recent seminar on "System Acquisition Initiatives," sponsored jointly by the American Defense Preparedness Assn. (ADPA), and the Army Materiel Command.

• **Hal Ort,** manager, Aeronautical Tactical Systems Marketing, and **Rick Hilton,** Customer Requirements representative, represented the Ventura Division at the recent Air Defense Suppression Symposium, Eglin Air Force Base, Fla.

Northrop Helps Fellowship Program

Lillian Gay Lewis, a freshman at Prairie View A & M University majoring in chemistry, is a student presently employed at Northrop Services, Inc. in Houston. She is a laboratory assistant at the Johnson Space Center helping chemists in an analytical laboratory involved in the analysis of water samples. She will be working at various jobs with Northrop Services, Inc. during vacation periods and summers until she graduates. She will then be eligible for permanent employment.

Northrop supports many programs for young people, especially those designed to encourage and help them continue their education in preparation for employment upon graduation. One such program is the Business Management Fellowship Program, operated by the U.S. Department of Commerce.

The program helps a student obtain a college education while at the same time gaining professional work experience for future jobs in business and industry. To be eligible, a student must be in the upper 10 per cent of the high school graduating class. The student must be accepted or be under consideration for acceptance at an accredited college or university, must have financial need, and intend to major in a field of interest to the participating firm.

"Participating firms, such as Northrop, provide vacation employment for the student until graduation," stated Mary Person, corporate administrator, Equal Employment Programs.

Northrop has 26 students participating in the fellowship program in various facilities throughout Southern California and the United States.

Northrop was one of nine firms that were primary business participants in the program last year.

WAITING FOR EVACUATION flight, Bill Tate took this picture of Art D'Andrea in Air America compound with other Americans. Mobs of Vietnamese rushed the World Airways 727, in background, that the Americans were to evacuate on. D'Andrea later flew out on an Air America C-46 and Tate made the last trip out of DaNang on that same 727 which returned later in the evening. At right, D'Andrea and Tate work on 19-foot boat they thought might be their only means of escape from besieged DaNang.

DaNang Escape Real-Life Drama for Tech Reps

For most Americans, the escape from DaNang and the orphan airlift was a newspaper headline or a television film scene. For Northrop employee Art D'Andrea it was a real-life adventure, complete with the ever-present danger of death and the heartwarming smile of a two-and-a-half-year-old orphan boy.

D'Andrea, an Aircraft Division employee since January 1974, was the company's avionics technical representative assigned to DaNang Air Base in South Viet Nam. The base had a squadron each of F-5Es and F-5As. One other Northrop tech rep, Bill Tate, was at DaNang.

There was no prelude to the disaster that hit DaNang. "U.S. Consulate daily briefings called the situation 'stable'," D'Andrea recalled. "The city itself was filling up with refugees, but base activity remained normal and orderly. Rocket attacks from the Viet Cong were part of the daily routine."

Cooking Special Dinner

That's how it was on March 26. That evening, while Tate's wife was cooking a special Thai dinner for a house full of guests, word came from the U.S. Consulate to prepare for immediate evacuation. All Americans were to leave DaNang early the next morning aboard a World Airways Boeing 727 and an Air America C-46.

"The word that we were leaving spread through the city," said D'Andrea. "Although we had been given boarding passes for the aircraft, so had a number of South Vietnamese families who were working for Americans. The next morning, mobs of people jammed the roads and the air base, spilling onto the runways.

"There was no control," he said, "just chaos. When the 727 landed, people rushed toward it to climb aboard, forcing the plane to take off without a full load. The same thing happened to the C-46."

Two Planes Gone

After the two planes had gone, the air base was sealed off and armed guards were posted to restrict entry. "One of the squadron commanders, a colonel, left the base to get his family," D'Andrea remembers. "The colonel had changed into civilian clothes. When he was refused re-entry to the base, he tried to force his way in. The guard shot and killed him.

"That afternoon, the C-46 returned first," D'Andrea said. "Again, a mob rushed the aircraft causing it to taxi to another part of the airfield. We Americans were stymied. When we moved toward the C-46, the crowd of Vietnamese also moved toward it forcing the aircraft to taxi out of reach."

The dilemma was solved with a decoy truck that was moved into plain view. The mob, taking the truck to be intended transportation to the aircraft, rushed it to climb on. Meanwhile, the Americans were quietly boarding another truck parked out of sight. The mob discovered the ruse.

"Our truck started up and raced toward the C-46," said D'Andrea, "with Americans and the mob in full pursuit. I barely clambered on board. We made it to the C-46 and took off for Saigon in a hurry. But we had to leave all our belongings. I got out with the clothes on my back, some money, my passport and two extra shirts I managed to pull out of a suitcase. Tate departed later that day on the 727. Fortunately, we both got out by air rather than by sea."

A few weeks earlier, D'Andrea had purchased a 19-foot sailboat for recreation. Sensing that he might eventually need an escape means, he decided to outfit the boat for deep-water travel to Malaysia, outfitting it with provisions, equipment and navigational instruments. The fiberglass hull, which leaked, needed repair for seaworthiness. D'Andrea never did get the boat ready. He escaped from DaNang three days before the city fell to the Communists.

Then the adventure took an unexpected turn that involved baby food, diapers and a boy named Nguyen Ngog Son.

Caring for the Young

From Saigon, D'Andrea went to the Philippines for airlift back to the United States on a World Airways DC-10. The flight carried 170 Vietnamese orphans. Each adult on board had responsibility for four children. D'Andrea, a bachelor, had youngsters ranging from one month to the two-and-a-half-year-old boy, Nguyen.

"Most of the kids were sick or covered with sores," D'Andrea said. "There we were — changing diapers, giving bottles of milk and food, cleaning up the sores during the 14 hours of flight time from Clark Air Base to Hawaii to San Francisco. And this kid, Nguyen, was frightened and withdrawn, he wouldn't speak or show any feeling.

"He had a rubber toy space ship clutched in his hand. I started him playing with the toy, showing him how it worked. He was reluctant at first. Then he smiled, the biggest, warmest smile I have ever seen. Nguyen stayed close to me throughout the trip. We were buddies — a kid who couldn't speak American and an American who couldn't speak Vietnamese.

"When it came time to part at Travis Air Force Base, Nguyen cried," D'Andrea quietly recalls. "So I rode the bus with him to San Francisco where the kids were being billeted. He cried again when we separated. I guess I did, too."

Welcome back, Art D'Andrea!

Check With Group Insurance Before Adopting Orphan

Employees who may be considering adopting a war orphan under the ongoing evacuation of children out of South Viet Nam, are urged to look into their medical plans for benefits available under either the Prudential or Ross-Loos plans. Information on dependents' coverage may be found in either plan's booklet or by contacting the Group Insurance Office, ext. 2586.

NRTC Scientists Use Technology to R

Dr. Hicks Announces Appointment Of Kent Kresa to NRTC Position

Kent Kresa has been appointed vice president and manager of the Northrop Research and Technology Center, reporting to Dr. Donald A. Hicks, senior vice president, Technical.

He was with the Defense Advanced Research Projects Agency (ARPA) from 1968 to 1975, as deputy director, Strategic Technology Office and most recently as director, Tactical Technology Office. While at ARPA, he was responsible for applied research and development programs in technological areas such as: advanced target acquisition techniques; precision guided munitions; advanced RPV development; ocean surveillance and control technology; laminar flow hydrodynamics; high energy laser development; and other equally sophisticated research and development programs.

Kent Kresa

Prior to joining ARPA, Kresa was at the Massachusetts Institute of Technology for seven years, primarily involved with ballistic missile defense research and defense re-entry phenomenology. He spent two years at Kwajalein as head of technical operations for Project PRESS and was involved in the early radar and optical re-entry phenomenology conducted at Wallops Island, Va.

He holds BS, MS and engineers degrees in aeronautics and astronautics from Massachusetts Institute of Technology. Prior to joining Northrop, Kresa received the Arthur D. Flemming Award as one of 1975's top 10 men in government. He also received the Secretary of Defense Meritorious Civilian Service Medal and the Navy's Meritorious Public Service Citation for his exceptional leadership and management of advanced anti-submarine warfare development efforts.

"Research and development must be unconstrained, to permit full exploration not only to find what will be useful, but also to determine what are the false leads and dead end streets. And, most important, to search for technical concepts that will lead to higher quality at lower costs."

These are the words of Thomas V. Jones, Northrop president and chairman of the board, as he emphasized the importance of the scientific disciplines to the overall health of the corporation.

"And," said Dr. Donald A. Hicks, senior vice president, Technical, "Mr. Jones' statement is why Northrop has placed such major emphasis in its Research and Technology Center.

"We believe in using technology to reduce complexity, increase performance and at the same time reduce costs of our systems and products.

"Almost without exception we have used technology in this way," said Dr. Hicks.

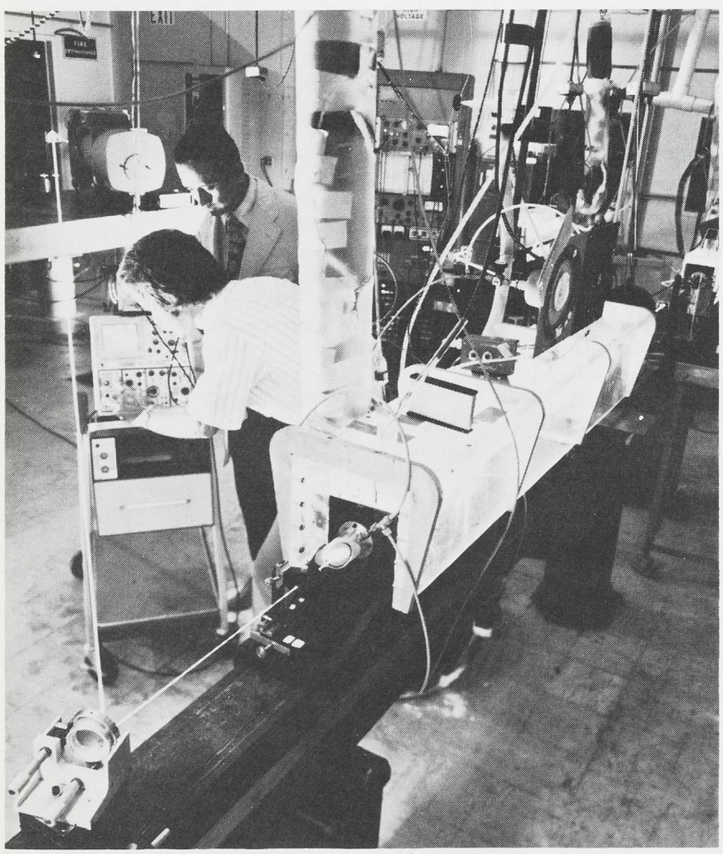
Carrying out this concept are the scientists and engineers at the Northrop Research and Technology Center (NRTC) located on Broadway in the midst of the Aircraft Division.

In the brown, multi-storied building adjacent to the Aircraft Division's Administration Building, scientists and engineers are working in such major areas as avionics, communications and electronics as well as providing technical, scientific and management services to various Northrop divisions and subsidiaries.

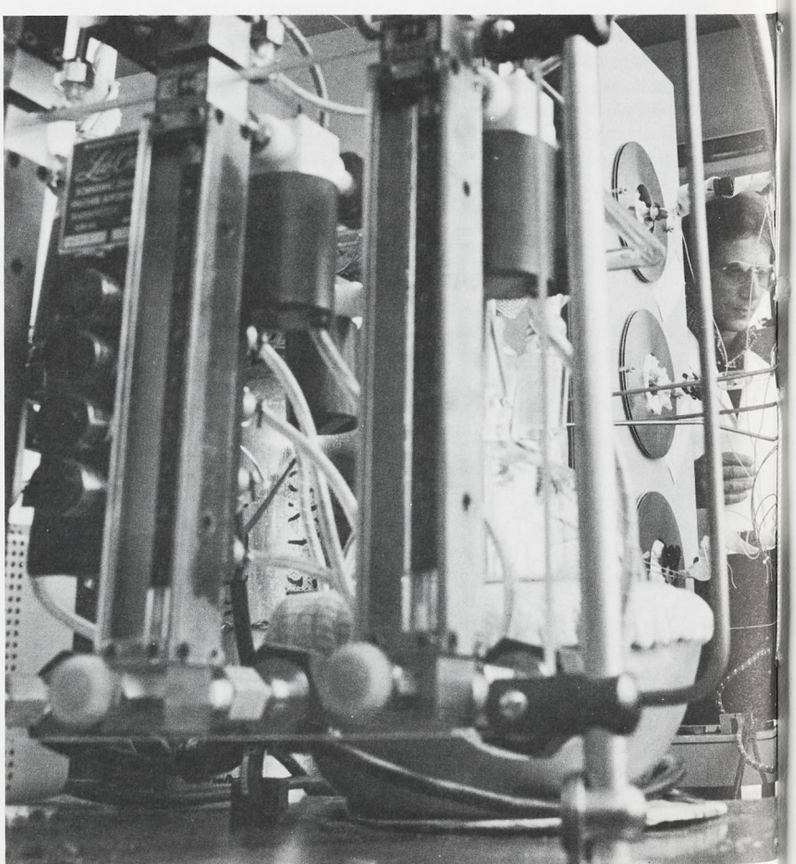
Kent Kresa has just joined Northrop Research and Technology Center as vice president and manager. Other key personnel include: Dr. Mani Bhaumik, program manager, Short Wave Length Laser Programs; Haven Brown, manager, Business Administration; Dr. Walter Crandall, chief scientist; Dr. Gerard Hasserjian, manager, Technology Laboratories; Dr. Michael Mann, manager, High Power Laser Programs; and Dr. Donavon Pretzer, manager, Advanced Programs and Plans.

Some of the major research areas where work is underway include new approaches to communications, navigation and identification systems. Research and development of automated systems for the prevention of failures in mechanical equipment is another area of scientific and engineering concern.

Other researchers are developing new techniques for speech and video picture processing; high-density, low-power large scale integrated (LSI) microcircuitry; hybrid electron beam and solid state devices; laser



STUDYING EFFECTS of crosstalk between different energy levels of the CO laser by using three such lasers simultaneously are Dr. Mani Bhaumik, program manager, Short Wave Length Laser Programs, and Scientist Vaughn Draggoo. Such studies have led to the development of high efficiency CO lasers which have approximately twice the efficiency of standard fluorescent lamps and the highest ever achieved.



INTEGRATED CIRCUITS ARE fabricated from basic silicon wafers with this complex se Matusiak, research lab technician, and Erna Dillard, research lab technician senior, in the

Northrop Employees' Savings Plans

Annual Report for 1974

The 13th annual report on the financial condition of Northrop Employees' Savings Plans is presented to the employees.

The report shows the condition of the Trust at Dec. 31, 1974, the values for each fund and the securities held in each fund at that date. The report also summarizes the cash transactions for the year ended Dec. 31, 1974 and since the inception of the Salaried Plan on Feb. 1, 1962, and the Hourly Plan on Feb. 1, 1966.

Unit values for each fund are shown as of the end of each Plan Year through July 31, 1971, for the five months period ended Dec. 31, 1971, and for each Plan Year ended Dec. 31 thereafter. Unit values are shown by quarters for the Plan Year ended Dec. 31, 1974.

Summary of Cash Transactions Calendar Year 1974

	Calendar Year 1974	Since Inception
Cash Received		
From Salaried Participants	$ 7,559,188	$ 64,769,332
From Hourly Participants	980,333	9,880,611
Total Participant Contributions	$ 8,539,521	$ 74,649,943
From Northrop (50% Participant Contributions less Forfeitures)	3,645,859	32,055,887
Total Contributions	$12,185,380	$106,705,830
From Sale of Bonds	13,706,627	55,388,939
From Sale of Stocks	21,665,464	98,428,608
From Income on Bond Fund Investments	1,017,213	6,132,264
From Income on Stock Fund Investments	738,607	3,994,711
From Income on Northrop Stock Fund	1,341,291	5,494,511
From Sale of Temporary Investments in Profit Fund	1,428,000	3,778,000
Total Cash Received	$52,082,582	$279,922,863
Cash Paid Out:		
For Purchase of Bonds (Including Accrued Interest Paid)	15,342,255	71,534,508
For Purchase of Stocks	26,403,063	129,868,284
For Purchase of Temporary Investments in Profit Fund	1,428,000	3,953,000
For Purchase of Northrop Stock (203,600 shares for Calendar Year 1974) (1,418,758 shares since inception)	4,995,273	36,253,232
To Participants on Withdrawal (in addition to 55,450 shares of Northrop Stock during Calendar Year 1974 and 380,228 shares since inception)	4,009,054	38,245,983
Total Cash Paid Out	$52,177,645	$279,855,007
Excess of Cash Paid Out Over Cash Received	(95,063)	
Cash on Hand (beginning of period)	162,919	
Cash on Hand (end of period)	$ 67,856	$ 67,856

Summary of Financial Condition of the Trust at Dec. 31, 1974

Cash on Hand:		
For Purchase of Bonds		$ 40,511
For Purchase of Stocks		124,393
For Purchase of Northrop Stock		(97,048)
Total Cash on Hand		$ 67,856
Interest Accrued on Bonds and Temporary Investments		392,053
Dividends Declared but not Received on Stocks		29,712
Market Value of Investments:		
Purchased with Participant Contributions:		
Bonds (Cost $14,586,328)		13,520,440
Stocks (Cost $30,683,433)		23,920,024
Purchased with Northrop Contributions:		
Northrop Stock (Cost $25,401,504)		24,794,904
Temporary Investments in Profit Fund (Cost $522,000)		522,000
Total Value of Trust		$63,246,989
The Value of the Trust is divided as follows:		
Participants' Savings Accounts:		
Bond Fund	$13,803,177	
Stock Fund	24,222,102	38,025,279
Participants' Profit Account		25,221,710
Total Value of Trust		$63,246,989

(Continued on Other Side)

Savings Plans Annual Report — Continued

Investments as of Dec. 31, 1974

Bond Fund	Face Amount	Cost	Market
Public Utility	$ 2,949,000	$ 2,799,010	$ 2,408,670
Industrial	7,308,250	6,655,768	6,192,684
U.S. Government	600,000	607,188	637,625
Banks & Financial Institutions	1,150,000	1,137,200	948,102
Federal Agencies	2,475,547	2,369,908	2,399,053
Foreign	143,000	143,000	109,481
Commercial Paper	340,000	340,000	340,000
Convertible Debentures	520,000	534,254	484,825
Total Investments	$15,485,797	$14,586,328	$13,520,440

Profit Fund	Shares	Cost	Market
Northrop Corporation	1,038,530	$25,401,504	$24,794,904
Commercial Paper		522,000	522,000
		$25,923,504	$25,316,904

Stock Fund		Shares	Cost	Market
Alcan Aluminum Ltd.	com	5,300	$ 174,504	$ 106,000
Aluminum Co. of America	com	4,000	194,903	119,500
American Express Co.	com	10,000	205,817	260,000
American Hospital Supply Corp.	com	10,000	219,155	257,500
AMP Inc.	com	7,500	271,013	179,063
Atlantic Richfield Co.	com	5,000	497,478	453,750
Automatic Data Processing	com	8,000	468,000	215,000
Avon Products	com	13,000	1,099,294	373,750
Baxter Laboratories	com	15,000	779,577	513,750
Black & Decker Mfg. Co.	com	4,700	258,699	161,700
Capital Holding Corp.	com	16,800	496,496	407,400
Caterpillar Tractor Co.	com	9,000	539,532	436,500
Citicorp	com	17,500	705,213	496,562
Colonial Penn Group	com	16,500	761,389	408,375
Continental Oil	com	5,000	208,295	223,125
Deluxe Checks Printers, Inc.	com	20,000	753,375	485,000
Digital Equipment Corp.	com	5,000	412,822	253,750
Dow Chemical Co.	com	4,500	283,181	247,500
Eastman Kodak Co.	com	3,500	242,251	220,063
Eli Lilly & Co.	com	10,000	696,575	680,000
Emerson Electric Co.	com	6,500	260,679	159,250
Emery Air Freight Corp.	com	5,000	323,638	167,500
Fluor Corp.	com	9,000	150,016	162,000
Franklin Life Insurance Co.	com	20,000	540,663	375,000
General Reinsurance Co.	com	700	158,258	121,100
Hanna Mining	com	15,000	812,275	375,000
Hercules, Inc.	com	3,500	135,678	84,000
Hewlett-Packard Co.	com	6,500	513,810	390,813
International Bus. Machine Corp.	com	8,000	1,991,218	1,344,000
Int'l. Flavors & Fragrances	com	4,080	148,761	100,980
Int'l. Tel & Tel Corp. - $2.25	pfd	4,900	159,215	101,675
International Tel & Tel Corp.	com	12,500	665,402	184,375
J. P. Morgan & Co., Inc.	com	4,000	253,864	207,000
Johnson & Johnson Co.	com	12,000	223,609	970,500
Kerr-McGee Corp.	com	4,000	323,505	286,000
Kresge Co.	com	14,400	537,930	318,600
Liberty Nat'l. Life Insurance Co.	com	6,400	174,262	177,600
Marley Co.	com	10,000	517,557	135,000
McDonalds Corp.	com	7,000	491,938	205,625
Minnesota Mining & Mfg. Co.	com	3,000	215,238	138,375
Moore Corp. Ltd.	com	8,000	417,913	326,000
Penney, J. C. & Co., Inc.	com	2,000	143,632	71,750
Pfizer Inc.	com	7,500	342,451	246,562
Phelps Dodge Corp.	com	3,000	113,591	87,750
Philip Morris Inc.	com	4,000	212,278	192,000
Phillips Petroleum Co.	com	6,000	326,648	259,500

Stock Fund (Cont'd.)		Shares	Cost	Market
Polaroid Corp.	com	4,000	405,467	74,500
Proctor & Gamble Co.	com	700	69,517	57,050
Prudential Building Maintenance	com	25,000	561,485	46,875
Rohm & Haas Co.	com	1,500	134,338	69,375
Schering Plough Inc.	com	10,000	274,555	525,000
Schlumberger, Ltd.	com	8,000	99,467	863,000
Sony Corp.	com	37,250	604,555	218,844
Texas Commerce Bankshares	com	4,000	153,375	112,000
Texas Instruments Inc.	com	1,500	147,984	101,625
Union Camp Corp.	com	2,500	144,882	97,187
Watkins Johnson	com	15,000	352,371	174,375
Weyerhaeuser Co.	com	4,400	191,486	120,450
Xerox Corporation	com	7,000	709,353	360,500
Bank of America C/D			500,000	500,000
Commercial Credit Co. D/N			572,000	572,000
First Nat'l Bank of Chicago C/D			500,000	500,000
First Nat'l Bank of Boston C/D			500,000	500,000
First Nat'l City Bank N.Y.			500,000	500,000
First Nat'l City Bank N.Y.			1,000,000	1,000,000
Ford Motor Credit Co. D/N			1,312,000	1,312,000
General Motors Acceptance Corp. D/N			2,029,000	2,029,000
Morgan Guaranty Trust Co. C/D			500,000	500,000
			$30,683,433	$23,920,024

History of Unit Values

Valuation Date	Bond Fund	Stock Fund	Profit Fund
7/31/62	$ 1.00678	$ .82673	$ .84299
7/31/63	1.07228	1.03982	.74533
7/31/64	1.12346	1.25478	.64951
7/31/65	1.18096	1.31530	1.05750
7/31/66	1.12924	1.38824	.97052
7/31/67	1.17227	1.78819	1.78347
7/31/68	1.17991	1.98598	1.62488
7/31/69	1.14589	1.94687	1.48373
7/31/70	1.14710	1.66295	.73156
7/31/71	1.31717	2.29024	.82760
12/31/71	1.40732	2.48758	.95972
12/31/72	1.51755	2.91606	1.06316
12/31/73	1.56547	2.29810	.82842
3/31/74	1.55513	2.11196	1.06431
6/30/74	1.52859	1.90377	1.04527
9/30/74	1.51001	1.38026	1.28370
12/31/74	1.61858	1.56498	1.21204

The complete annual report of the Trustee and investment manager, Manufacturers Hanover Trust Company, is available for inspection, during regular first shift hours, in the Industrial Relations office serving your facility.

duce Product Cost

frared countermeasures and mole-lar lasers.

"One of our major objectives is to velop lasers for both military and mmercial uses," said Kresa.

"In particular, we have concentrat- on the development of electrically cited lasers where we are looking r extremely high conversion effi-ncies of electrical energy into radi-ed laser energy."

Laser Applications

While much of the laser work is in ilitary areas, research is also going rward for commercial applications, ch as in metal cutting, welding, heat eatment and paint curing, to name a w.

Small lasers have been commer-ally available for a number of years d are used in medicine, trimming tegrated circuits, cutting and elding.

Kresa noted that one of Northrop's imary interests would be in the use higher power lasers for cutting and lding metals used in aircraft pro-ction, such as aluminum and ti-nium.

Along with such laser development ork, supporting electro-optical chnologies are also being explored, cluding development of infrared ndows and large area, high energy ectron beam guns which are used to "trigger" the laser. These "guns" are used to ionize and stabilize the lasing medium, such as carbon monoxide.

Work also is progressing in the ultraviolet and visible light ranges. Here, too, emphasis is on developing lasers where potential conversion efficiency is high. Such lasers are expected to find uses in communications detection systems as well as products or processes like isotope and chemical separation.

Northrop has one of the most extensive nuclear radiation research facilities in the country. This facility is located at Hawthorne and includes a Triga reactor for supplying neutron damage to semiconductor materials, microcircuits and electronic subsystems. A Cobalt 60 source and several flash x-ray machines are used to study electron beam and gamma ray damage effects to electronic materials and components.

Institutional Grants

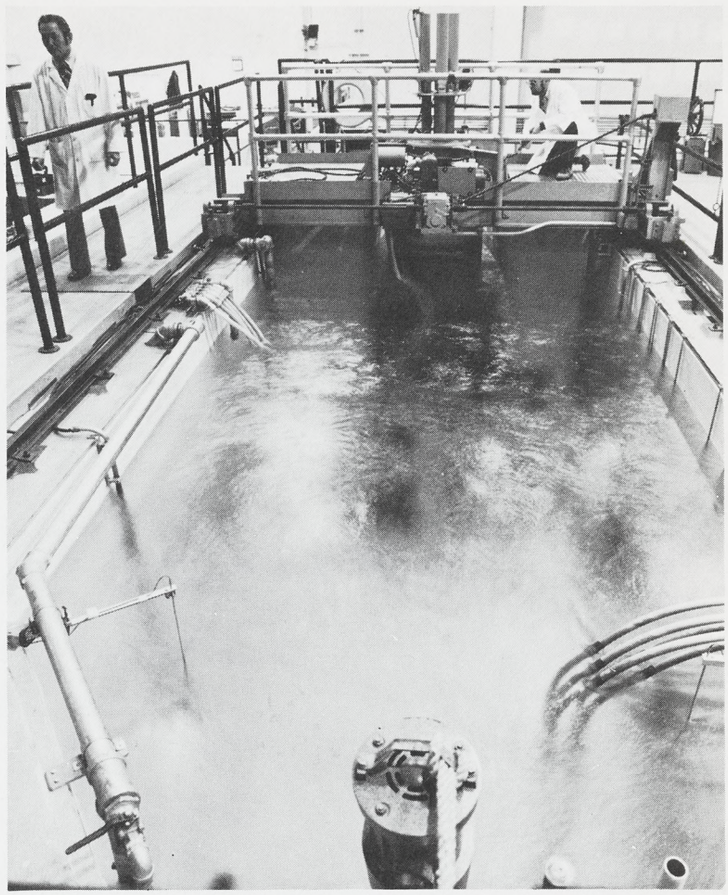
Northrop not only conducts research and development in advanced technologies within NRTC and the operating divisions, but also supports advanced research by making grants to such institutions as California Institute of Technology, University of Southern California and Stanford University, just to name a few.

Northrop Research and Technology Center staff members are selected for their professional competence, broad visionary capabilities and multi-disciplinary talents. At the present time, 33 out of 161 staff members have doctoral degrees.

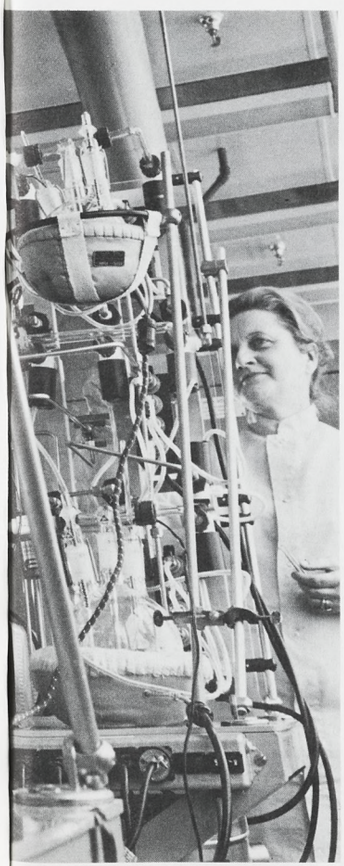
Assisting Northrop's research team is a technical management team with experience in administering research and development programs which are directly related to current and future Northrop product areas.

"The responsibility at Northrop for applied research, development and production are closely intertwined. We have found that major benefits can be realized from the creative application of technology to the interface between design and production," said Dr. Hicks.

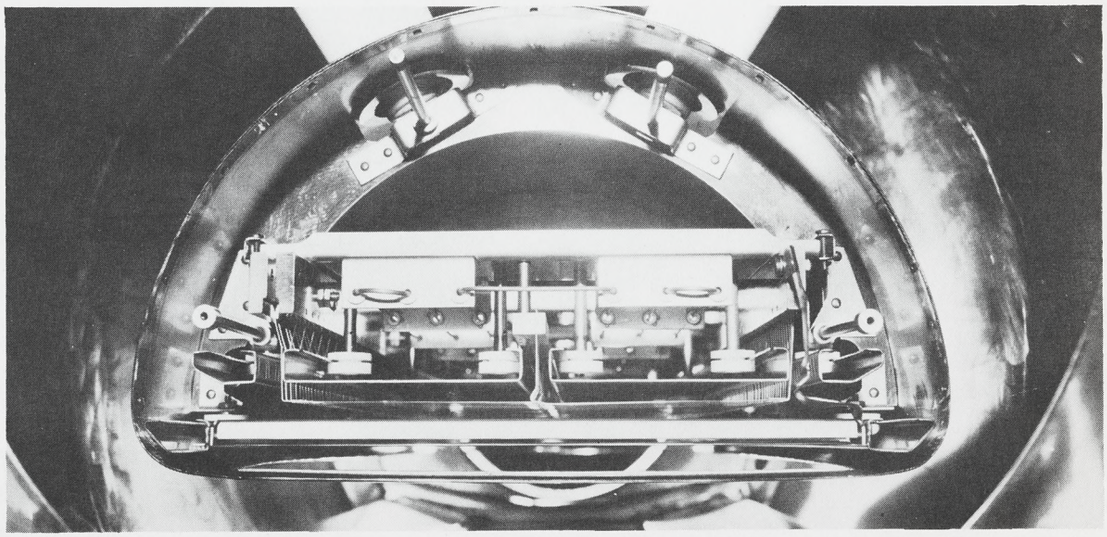
He summed up the philosophy behind the Research and Technology Center by noting, "We are focusing our efforts on what we think are important military requirements where Northrop can and should have a role. We want to match our long-term capabilities with what we believe to be the major needs of our customers."



REACTOR POOL at Northrop's Triga Reactor Facility is checked by Gerry Fujii, technical staff, and George Cozens, health physicist. This facility is one of few in the country devoted to studying the damage effects of simulated nuclear weapon environments on electronics, materials, components and subsystems.



ductor processing equipment by Robert roelectronics Laboratory at the center.



INTERIOR OF NEWEST electron beam gun used as a 'trigger' in activating high energy lasers to ionize and stabilize lasing medium at Northrop Research and Technology Center is shown. This is the largest, most advanced filamentary electron beam gun in the country.

Com-Bus Commuters Leave The Driving to Someone Else

With all of the serious economic situations, overcrowded freeways, and the many discussions on the possibility of higher gas prices, Northrop employees may be facing more commuting problems in the near future.

Many employees have already found that commuting in other than their own automobiles has many advantages. To date, over 300 employees pay about $11.50 a week to ride commuter buses from the areas of San Fernando Valley, Simi Valley, Thousand Oaks, Malibu, Santa Monica and North and South Orange County. Types of vehicles range from 12-passenger vans to 44-passenger coaches.

New Route Added

Ray Dudley, liaison engineer, Aircraft Division, and Ralph Brant, supervisor, Manufacturing, Electronics Division, Hawthorne facility, recently had enough volunteers to begin a new route for the Southern Orange County area with a bus belonging to the Southern California Commuter Bus Service, Inc., commonly known as Com-Bus. The route begins at Brookhurst, along the San Diego Freeway, serving the 7 a.m.-3:42 p.m. shift.

Brant drives and Dudley handles the paper work for a van which carries 17 people. The per person cost can be as little as 3.19 cents a mile, which can be compared to 15 cents a mile for a compact car, or about 26 cents a mile for a large automobile.

Dudley estimates a minimum of $50 a year savings on his auto insurance. He finds a great reduction in maintenance on his own automobile since riding the bus.

"There are many advantages to this type of commuting," says Dudley. "Passengers are always assured of a reserved seat. In addition to conserving energy and taking less space on the freeways in the event of another gas shortage, we won't have to wait in long lines at stations to buy gas. The stations will even open on Sundays for us. If a person has only one car, riding the bus leaves the car free for other family members to use. One of our passengers rides his bicycle to the bus stop.

"The bus stops right at your plant gate. There is no parking problem. If any one of us has to go to another facility, we ride the company's interfacility buses.

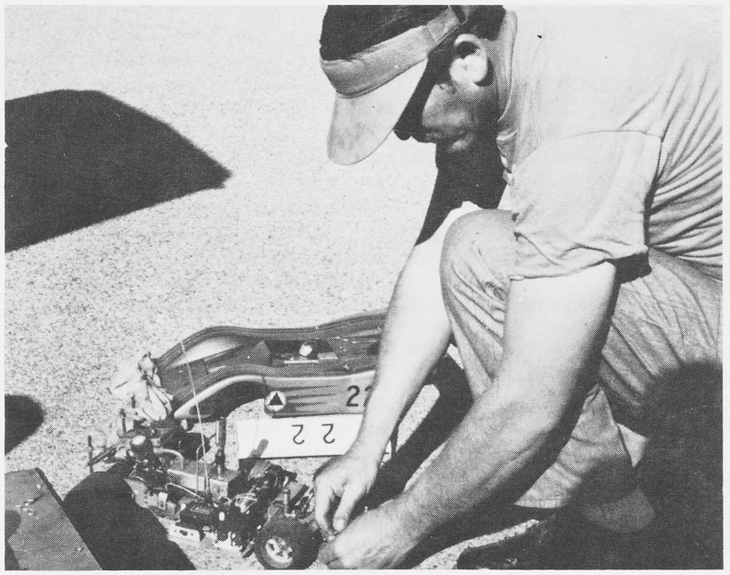
"Com-Bus carries $750,000 liability insurance and $50,000 medical coverage per person. The vehicles are equipped with all the safety equipment required by the State of California Public Utilities Commission. On board are such items as first aid kits, fire extinguishers, and road flares or reflectors for use in case of an accident. Each commuter bus driver is required to carry a Class 2 driver's license and takes a special medical examination every two years.

Mini-Social Circle

"As passengers get to know each other, it becomes a mini-social circle. We have what we call a 'miniature democracy' on our bus. When a situation arises, each passenger casts a vote — and — the majority rules. So far things have worked out quite well," Dudley concluded.

WAITING FOR THE last of the passengers to board the Com-Bus at the Electronics Division, Hawthorne, for the trip home to Orange County are, clockwise, Ray Dudley, Bob Miller, Bob Eastridge, Aircraft Division; Don Lizotte, Electronics Division; Jim Duffield, Bob Harris, Frank Strosnider, Steve Ello, Doug Crouch, Aircraft; Tony Musuraca and Ralph Brant, the driver, Electronics Division.

Recreation Notes



JUAN GONZALES checks out his model car before a competition. Juan is president of the Road Runners, an NRC club for radio-controlled cars. The Road Runners join with three other clubs to race every Sunday and on the fourth Sunday of each month sponsors the race at the club track at the Electro-Mechanical Division's Page Court facility near the Angel's Stadium in Anaheim. All Northrop model race fans are welcome.

★ ★ ★

Saturday, May 17, is the date for the 12th annual NRC Night at Disneyland. Tickets are on sale at all Northrop facilities exclusively for Northrop employees, their families and guests. Admission price is $4.75 per person. Children two years and under, free. This entitles Disneyland-goers to unlimited use of all attractions, except shooting galleries. The park will be open from 8:30 p.m. to 1:30 a.m.

★ ★ ★

A kickoff meeting to finalize plans for the Northrop Recreation Club Christmas Hawaiian-style tour is scheduled for Wednesday, April 23, NRC Clubhouse at Hawthorne. Refreshments will be served and the latest Hawaiian movie will be shown. Because of limited space, tour members planning on this trip are urged to make reservations early. Contact Aircraft Division Personnel Activities ext. 2486 for information.

★ ★ ★

Personnel Activities has tickets on sale for the Ice Capades, Saturday, May 3, 5 p.m. Employees pay $4.50 for adults and $2.75 for juniors 16 and under. Contact Cathy Paris, Aircraft Division ext. 2486 for information.

★ ★ ★

Pairings for the first round of the third annual All-Northrop Basketball Tournament slated for April 21, 22, and 26, have been announced by Victor Huang, Electronics Division basketball commissioner, and host for the tournament.

April 21 — Rogers Park, Inglewood

6 p.m. Electronics Division vs. Corporate office
7:30 p.m. Electro-Mechanical Division vs. Aircraft Division
9 p.m. Palmdale vs. Ventura Division

Game times and pairings for the second round will be announced at the conclusion of the third game. Play the second night will also be held at Rogers Park, with the championship game and follow-up spots being played April 26 in the Boys' Gym at Hawthorne High School.

Rogers Park is located at 400 W. Beech Blvd., one block west of LaBrea Ave., Inglewood. Hawthorne High School is located at the intersection of Inglewood Ave. and El Segundo Blvd., Hawthorne.

★ ★ ★

Northrop employees, families and friends are invited to a six-day tour to Mazatlan, Mexico, June 16-21. The "Fiesta in Mazatlan" costs $279 for adults, $169 per child under 12. It includes air fare, two meals per day and many other extras. Contact Jeannie Zubak, Electronics Division, Hawthorne, ext. 2542.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Volkswagen, 1970, 48,000 mi., $1500. 213-530-7938.

Motorcycle, 1971 Honda Scrambler, CB-175, 2100 mi., $500. 213-374-4780, 213-375-8968.

Dodge, 1963, Siesta 8½' Cab-O tel-scope camper, $1195. 714-898-1517.

Chevrolet, 1955, 6 cyl., needs work, $250. 213-924-2563.

Ford, 1972 ¾-ton, Custom Camper w/sleeper camper, p/b, p/s, air, r&h, dual tanks, $3295. 213-540-0863.

Chevrolet, 1966 Malibu, V-8, 283 eng., auto., 2-dr., r/h, p/s, p/b, $600. 213-370-3209.

Pontiac, 1966 Tempest sta. wagon, 326 V-8, fact. air, p/s, p/b, roof rack, $350. 213-888-1231.

Ford, 1963 Galaxie convt., completely restored, new 390 eng., $750. 213-377-8627.

Chevrolet, 1965 Malibu sta. wagon, 6 cyl., auto. $595. 714-956-7838.

Pontiac, 1970 Lemans 2-dr, h/top, p/s, a/c, $1600. 213-973-2236.

Datsun, 1974 truck, 11,000 mi., $2760. 213-542-6844.

Mustang, 1967 2+2, stereo tapedeck, 289 eng., auto., $850. 213-865-5131.

Dodge 1972 Tradesman 100, paneled & carpeted, $3950. 213-378-9660.

Chrysler, 1962 Newport sta. wagon, auto., p/b, p/s, $200. 213-941-1865.

Motorcycle, 1971 Honda 450, rblt. top end, new bat., $700. 213-329-1952.

Motorhome, 1972 Pride-N-Joy, self-contained, 20', on Dodge chassis, sleeps 6, 360 V-8 eng., p/s, p/b, extras, $6600. 213-542-7176.

Alfa Romeo, 1970 Spyder convt., fuel injected, chrome whls., stereo FM & tape, $2900. 213-391-3564.

Ford, 1966, sta. wagon, r/h, a/c, $500. 213-675-3254.

Datsun, 1972 620 pickup, glass shell, window boot, $2100. 213-887-7158.

Studebaker, 1966 2-dr. sedan, 6-cyl., std. trans., 28,000 act. mi., $575. 213-671-9371.

Triumph, 1972 Spitfire, 19,400 mi., AM/FM, mag. whls., $1900. 213-542-1270.

Chevrolet, 1972 Monte Carlo, a/c, AM/FM radio w/rear spkr., extras, $2995. 213-326-7922.

Camper w/truck, 8½', $2700. 213-325-0353.

Morris Minor, 1959, $300. 213-774-7724.

Pontiac, 1973 Lemans, AM/FM, a/c, $4000. 213-372-3589.

Datsun, 1974 pickup, cust. int., r/h, $1300 mi., $3595. 213-973-1722.

Ranchero, 1973 GT, w/shell, 16,000 mi., all power, a/c, $3000. 213-834-3290.

Motorcycle, 1974 Honda 360, 1000 mi., lug. rack, roll bar, $975. 805-947-7424.

Miscellaneous For Sale

Wardrobe Closet, metal, 36" wide, sliding doors, $30. 213-375-2841.

Couch, makes into queen-sized bed, lt. brown tweed, $45. 213-377-5362.

Stenotype Machine, near new, $200; stove, lge., w/grill, $25; refrigerator, frost-free, $100. 213-479-8774.

Trapeze Bar, for invalid's bed, $50. 213-322-2332.

Surfboard, 7' Lightning Bolt, diamond tail, $125; hydroplane, 8' w/15 h.p. Evinrude, $350. 805-498-3791.

Radio, for VW sedan, $10; console, hi-fi AM/FM radio comb., $20; bed frame, dble., head & foot board, $25. 213-672-8404.

Chest, 4-drwr., $65; baby bed, $40. 213-863-3758.

Table, 42" round, maple, & 5 captains chairs, $75; chandelier, maple, $35; desk, $50. 213-594-0542.

Figure Skates, girl's SP Teri pro, size 3, $40; men's SP teri, 10½ med., 2-star blade, $30, never broken in. 714-828-9243.

Miscellaneous For Sale

Tent-umbrella, 9x9 Coleman, $25; heater, lge, Coleman, $25; cots, 2, $3 ea. 213-376-5455.

Waterbed, king size, frame & pink shag bedspread, $50; organ, C & G chord, 4-rhythm tempo, $95. 213-320-8297.

Rims, OEM steel, size 14x7, for Chev., $16. 213-675-0128.

Hospital bed, all steel, $75. 213-540-0070.

Dining Room chairs, 4 matching, antique oak, $200. 213-892-8268.

Ice Skates, boy's, Hyde, size 6, w/blade guards, $10. 213-378-2790.

Bicycle, girl's 20" Stingray, $35. 213-645-8525.

Camera, Leica M3 single stroke MC meter, 50mm summarit 1.5, 35mm summaron 3.5, 85mm Nikkor-pc 2.0, case, $350. 213-373-1719.

Sailboat, trailer, $200. 213-376-7510.

Turntable, Garrard Model 42M, 3-spd. $40. 805-498-4397.

Pony, 10-yr-old gelding, 11.2 hands, ½ Shetland, ½ Welsh, $125. 213-377-1094.

Hogs, 2, 175-lb., $80; 325-lb., $125. on ranch near Hemet. Can be dressed on premises. 213-323-1509.

Skis, Head, 185 Standards w/Solomon bindings, $80; Falcon, 160 w/Marker bindings, $25; buckle boots, Henki, size 6½, $20. 213-545-6387.

Bicycle, 27" Orly, 10-spd., men's racer, $35. 213-534-4068.

Wheelchair, VIP-21, safety belt, used a few times, $175. 213-585-3881.

Commode, cream-color vinyl padded seat & back, boilable pail & lid, $25. 213-831-1745.

Tires, 5 G78x15 8 pr. on Ford, 5-bolt rims, 80 miles, $125. 213-645-7715.

Eyeglass Frame, men's, silver, $26. 213-320-4989.

Bicycle Baby Carriers, 2, $5 ea.; hanging lamps, 2, $20 ea.; dishes, Melmac, set of 8, $15. 213-676-3050.

Planter, home hydroponic garden, 18x30, auto. feeding, $40. 213-679-5637.

Stereo, Morse solid state AM/FM radio, 4-track tape, turntable, headset, spkrs., $150. 213-392-2396.

Guitar, Ovation 6-string, hard shell case, picks & capo, $300; stereo, AM/FM Webcor turntable, in cabinet, $25; TV 19" RCA Victor, b/w, $35. 213-675-5675.

Wheels, 4 tires, & hubcaps from 1974 Toyota, 155x13, 6000 mi., $60. 213-375-8536.

Bicycle 10-spd., men's, extras, $100. 213-822-2100.

Greenhouse, dble. Casaplanta, still in orig. box, $210. 714-637-3652.

Diamond, ⅓-carat, $250. 213-375-4747.

Boat, 14' Glaspar, elec. start, 40 h.p. Johnson outbd. motor, trailer, $550. 213-375-9644.

Executive Desk, lge., wood, $85. 714-522-1608.

Pup, silky terrier, male, AKC reg. 6 wks. old April 23. $225. 213-329-7994.

Mag Wheels, Chaparrals 15" w/lugs, $70. 213-542-3125.

Wheelchair, $40. 213-973-5216.

Bed, king size w/mattress & box spring, Mediterranean Pecan, hd/board & matching night stand, incls. elec. blanket, 2 blankets, spread, 6 sheets, $200. 213-541-3000.

Tires, 4 5.60 x 13 Sears w/w, $3.50 ea. 213-894-1381.

Lens, telephoto, 135mm, 2.8 bayonet mounted, 4 mos. old, case, $40. 213-831-3383.

Rotary Lawnmower, $25. 714-894-9517.

Wheels & tires, 2 14", fit Ford, Dodge, AMC, $20. 213-378-1026.

Rug, 25 yds. Karastan 100% plush pile, gold, $13 yd. 213-676-1085.

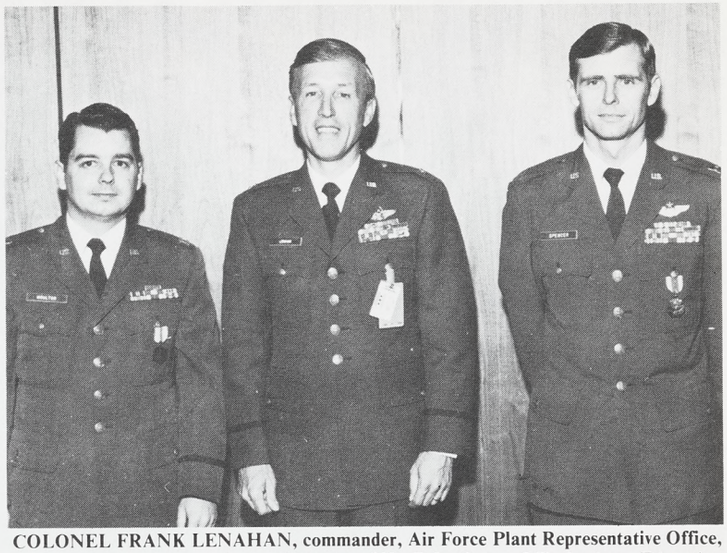
Fish Aquarium, 77 gal. Pemco, stainless steel, pump, filter, htrs., $125. 213-374-4703.

Cocktail Ring, pearl, white gold, $30; carpet, 9 x 12 candy stripe, $35; sewing machine, Sears, $25. 213-370-8229.

Mobile Home, 1974 Signature, 58'x24' at El Toro, 2-bdrm., 2 ba., many extras, fully landscaped, $18,000. 714-581-3659.

Boat, Boston Whaler, 17', trailer, outbd. 4 cy. Homelite, $2000. 213-973-5434.

Mattress 2 twin, box springs, $50 set or $90 both. 213-325-8752.



COLONEL FRANK LENAHAN, commander, Air Force Plant Representative Office, center, recently presented awards to two USAF Institute of Technology Education With Industry officers in training at Northrop. Captain Donal Moulton, right, received the Air Force Commendation Medal, and Captain David Spencer, the Meritorious Service Medal. While in training, officers visit each operating division and subsidiary.

Miscellaneous For Sale

Range, gas, $150; washer, gas, $150, both still in warranty. 213-530-7345.

Hang Glider, Seagull #3, 20', crash helmet & full cover. $500. 213-540-0696.

Function Generator, Hewlett Packard Mod. 202A, $35. 714-838-1519.

Bicycle, ladies, 24", 3-spd. $55; comptometer, 12-key, $20; adding machine, Addox, $25. 213-326-6456.

Cruiser, 20' Bell Boy, 100 h.p. outbd., all instruments, C.B. radio, trailer, cuddy cabin, less than 500 hrs. on eng., many extras, $1500. 213-672-3883.

TV, 19" portable, $20; dryer, elec., $25; rifle, Russ, 7.62mm, $20. 213-830-4968.

Pup, female Irish setter, 5 mos. old, $40. 213-675-8262.

Bar, black leather tufted w/walnut top, approx. 6' long, $275; dishwasher, Whirlpool Superior 420, portable w/cutting board, $125. 213-973-1722.

School Desks, 2 old style, $70 pr. 213-941-1865.

Dining Set, solid hard-rock maple, 36x52 table, 6 chairs, 5' hutch, $650. 213-378-2036.

Motorcycle Helmet, used one time, $50. 213-672-2338.

Dinette Set, 48"x30" table, 4 chairs, $40; chain link fence, 3' high, 30' lg., w/3 posts & 4' gate, $20. 213-541-2620.

Wanted To Buy

Player piano, oak. 213-377-5362.

Nova, 1971, 72, 73, prefer a/c, good condition, mechanically excellent, 307 or 350 eng., auto. 213-530-7938.

Records, rhythm & blues vocal group, 1950-1959, 45 r.p.m., 33⅓ r.p.m. 213-924-2563.

Recorder, Akai or Pioneer, 8-track, 2 or 4 channel receiver, Pioneer or Sony. 213-542-6844.

Jewelry Making Equipment, oven, caster, access. 213-941-1865.

Cameras, Pen F, lenses & access., half-frame 35mm, screw-mount lenses for Leica/Canon, access. for rangefinder Canons. 213-413-4642.

Lawn Edger, gasoline powered. 213-3[illegible]5-7822.

Piano, upright, any condition. 213-671-6813.

Piano. 714-956-7838.

For Sale Or Trade

Motorcycle, 1970 Moto-Guzzi, 750 cc police special, trade for $1500 equity in Corvette or Cadillac. 714-995-4053.

Personals

Thank you for the prayers, kindness & sympathy expressed on the death of my husband, Virgil Givens. The children & I will never forget your generous contributions & concern. RHODA M. GIVENS

Thank you for your kindness & sympathy at a time when it was deeply appreciated. ROSE MCKINDLEY & FAMILY

Palmdale Facility Has Good Turnout During Blood Drive

Northrop personnel at the Palmdale Facility added their contributions to the Northrop Blood Program last month when 151 donors turned out and 134 pints were collected. It was the first American Red Cross Bloodmobile operation at the facility in several years.

Personals

To my many friends & fellow workers, my sincere thanks & deep appreciation for the wonderful retirement gifts & send-off. A. J. SHERRIFF

To all my fellow workers & friends at Northrop, my most humble thanks for the retirement parties that were given in my honor. OLIVER PELLERIN

I want to thank all my friends at Northrop for the flowers & cards received when I was in the hospital. AL SULLIVAN

Redondo Union High School graduates wanted for 1955 class 20-year reunion. Call 213-325-8134.

Many thanks to all my friends at Northrop for their good wishes & gifts received at my recent retirement party. C. E. OATES

Roommate wanted, female to share 2-bdrm. apt. Hawthorne, $90. 213-535-0474. 213-644-2581.

To all my Northrop friends, your kind expressions of sympathy are deeply appreciated & gratefully acknowledged. DOTTIE BERGMAN

Free

Water Bed Frame, king size, needs some work. 213-322-2332.

Ride Offered - Wanted

Riders wanted, midnight - 7 a.m., near Bolsa & Brookhurst, Aircraft Div. ext. 1045 after midnight. 714-839-1184.

NORTHROP NEWS

Vol. 33 **No. 4**

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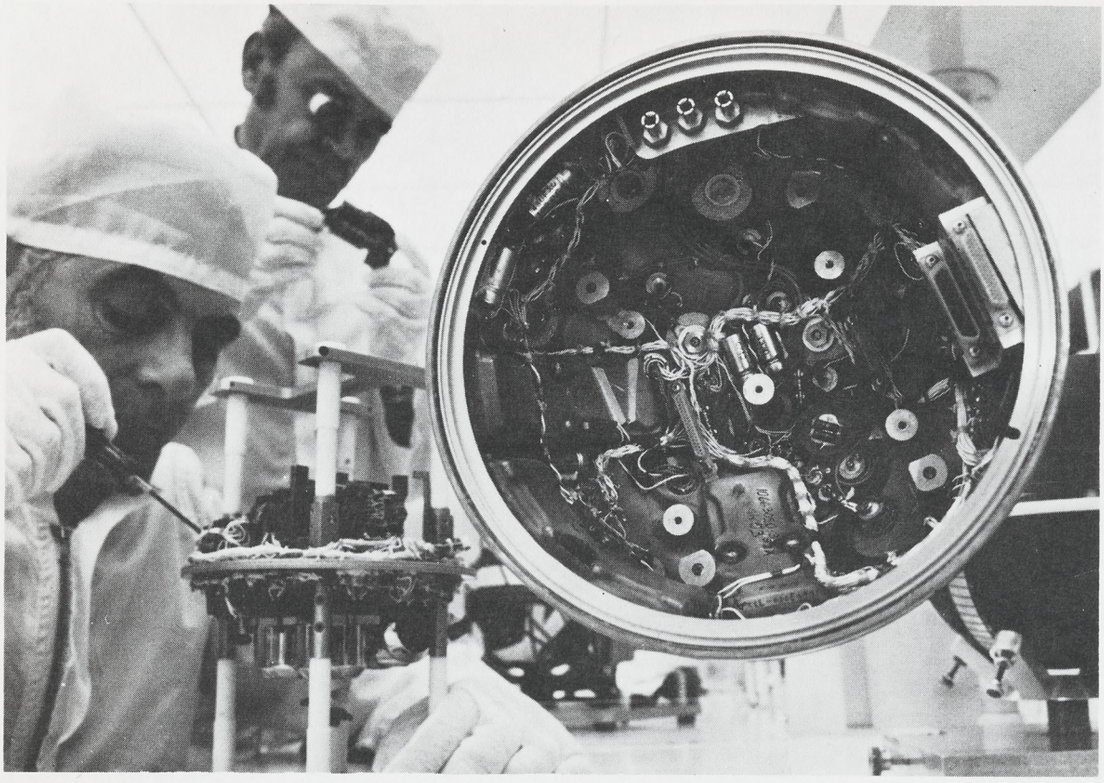


APPLYING EXPERTS' TOUCH to C-5A Inertial Measurement Unit (IMU), Northrop's unique floated ball platform, are Tony Santaella, left, and Howard J. Roberts, technicians, Avionics Department. Production, repair and overhaul of C-5A Inertial Navigation Equipment (INE) components constitute one of the Electronics Division's most successful, continuing projects.

C-5A Program Reaches Milestone

In one of its most important continuing programs, another milestone has been reached with the Electronics Division becoming prime contractor to the Air Force for repair and overhaul of C-5A Inertial Navigation Equipment (INE) components.

The division has been supplying INE components for the program as a subcontractor to Lockheed since 1967, after winning the contract for the integrated navigation system on USAF's C-5A Galaxy fleet. The system uses the Northrop-designed floated ball inertial platform.

Estimated value of 1975 repair and overhaul of C-5A INE should exceed $4.5 million, with another $5 million in new spares, says Richard DeFussi, chief, Contracts Administration.

Air Force Repair

The Air Force also performs repair and overhaul of inertial navigation equipment at two Air Logistics Command depots. Effective April 1, prime overhaul depot for C-5A INE has been shifted to Ogden, Utah, from San Antonio, Tex., DeFussi, says. During the transition period, the Electronics Division has been serving as the major overhaul depot to support the C-5 program.

"We will continue as a supplementary depot when the Ogden facility becomes fully operational," DeFussi says. The other Air Force depot handling C-5A Inertial Navigation Equipment is at Newark Air Force Station, Ohio.

Nine Components

J. D. McClanahan, program manager, said the Avionics Department under Air Force contracts, produces and provides repair services for nine components for the C-5A inertial navigation system and MADAR system. These line replaceable units are: Inertial Measurement Unit (IMU), control power supply, primary computer, auxiliary computer, primary converter, auxiliary converter, indicator panel, control panel, and the MADAR computer.

Current production contracts include 16 new Inertial Measurement Units with deliveries to begin starting in September.

There are 125 Electronics Division personnel involved in the C-5A program at Hawthorne, and four field engineers at Air Force depots.

Service Awards

Lambert Ligtenberg, Manufacturing Control Unit, Hawthorne, observed his 25th anniversary April 5, to head the list of service awards for this month.

Others observing service awards are: 20 years — Eloise Misko, Palos Verdes; 15 years — Howard Archer, Lore Krumreich, Robert Cooper, John Nakakihara, and Warren Prentiss, Palos Verdes; Donald Doveatt, Donald Ross, James Albrecht and Harvey Mitchell, Hawthorne.

NRC Calendar

The NRC Club at Hawthorne is offering aluminum frame tennis rackets for $12.50 including tax. Rackets come with braided nylon strings and in men's and women's models. Order from Fran, Hawthorne, ext. 2425.

* * *

The United Steaks of America is off and running, says Del Wyatt, Employee Services representative. Under the program, NRC at both Hawthorne and Palos Verdes, is offering quality meat, which can be ordered Friday through Wednesday and is delivered to Hawthorne on Thursday, Palos Verdes on Friday. Packages ranging in price from $8-$29 include steaks, roasts, lobster, shrimp, veal, trout and pork.

* * *

Travel Notes: NRC Travel Club reports there are still a few openings left for the Colorado River raft excursion, June 8-14. Cost is $452.40. Call ext. 2542.

* * *

Summer bowling leagues start in early May and there are still some openings for both beginning and experienced bowlers. Contact Dorothy Baldwin, ext. 2213; Bill Myerson, Mariposa ext. 6569, or Rosalie Smith, Aircraft Division ext. 2603.

* * *

NRC Ski Club's monthly meeting is set for Thursday, April 17 at 8 p.m. at Lococo's, Manhattan Beach, with a drawing for a free trip to Mammoth Mountain. Next ski trip is to Mammoth April 25-27. Contact Terry Dickson, ext. 2242.

ELECTRONICS DIVISION advertisement, running in current issues of *Aviation Week & Space Technology* and *Air Force* magazines, describes Northrop's floated ball inertial system as applied to USAF's AWRS aircraft and the C-5A program.

Division Wins MX/AIRS Award

The Electronics Division last Friday received official word it had been awarded the highly important MX/AIRS contract, in a stiff competition with two other major firms.

The Air Force announced that Northrop had received initial funding of $3 million under a $32 million contract to design and develop the Advanced Inertial Reference Sphere (AIRS) for the USAF's Advanced ICBM (MX) Technology program.

"This contract is the culmination of five years of effort dedicated specifically to the MX/AIRS project. I wish to congratulate all our people involved in this successful team effort," said David N. Ferguson, corporate vice president and division general manager.

"Many of you already know the importance of this contract," he said. "It represents a major step in securing a significant role for the Electronics Division in the initial development of this important national defense program. The contract was highly competitive, and our winning it recognizes our capabilities in the most advanced application of guidance system technology."

Work under the new contract, to be conducted at both Palos Verdes and Hawthorne, includes design and development, fabrication of hardware, software development, and engineering tests, said Dr. William Parker, manager, Strategic Missile and Space Systems Dept. He said that at its peak, the program would involve 150 engineers, plus manufacturing and other personnel.

PPD Will Share Work

In addition, the Precision Products Department, Norwood, Mass., which is already under contract for Third Generation Gyros (TGGs) for the MX program, will perform part of this program, Dr. Parker said.

Four MX/AIRS inertial measurement units (IMUs) will be produced in evolutionary steps under the contract which is intended to demonstrate a suitable design for entering into a low-risk engineering development program, Dr. Parker said.

For the past 10 years, the Electronics Division has been working in parallel with the Charles Stark Draper Laboratory, Cambridge, Mass., on the development of advanced inertial measurement units, including the "floated ball" IMU produced by the company for the Air Force's fleet of C-5 transports.

According to the USAF

The MX Technology program, according to the USAF, is designed to provide the base to support development of system options that are capable of responding to any missile threat. A decision to enter engineering development of, or to deploy, an advanced ICBM could be made based on the technology developed from this program.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California **Vol. 33, No. 5** **May 1975**

Belgians Receive Omega Unit

LEARNING THE SYSTEM, visiting members of the Belgian Air Force operate Omega navigation equipment during operation and maintenance training, conducted by Rick Crilly, left. Belgian visitors are left to right, ISM Jean Van Weyenberg, Adj. Alfond VanCappellen, and Lt. Roland Konings.

First production unit in a contract from the Belgian Air Force for airborne Omega navigation equipment was delivered on schedule by the Avionics Department and shipped to Belgium for installation on the BAF's C-130 fleet late this month.

Delivery and acceptance of the ARN-99(V-4) at the Hawthorne facility was made "right on time," said Anthony Laviano, International Contracts. "We met our schedule and, according to the agreement with the BAF, which delegated authority directly to the division, acceptance was accomplished."

The delivery enabled a group of six Belgian Air Force representatives to begin maintenance training on the system immediately.

The two-week training course, conducted by Rick Crilly and Ron Sutton, Field Service and Training, consisted of classroom and system operation and maintenance work. The equipment operated with actual Omega signals from the roof antenna from Japan, North Dakota, Hawthorne, and sometimes Trinidad.

"They (the BAF personnel) were very interesting to work with as they were the first group from an overseas country to be trained on the airborne Omega," Crilly said.

From the viewpoint of the visiting Belgian NATO members, the training was essential for maintaining the system once it becomes operational aboard BAF C-130s starting in early June.

"The Omega equipment is easy to use and easy to maintain," said Lt. Roland Konings, maintenance officer, 15th Wing. "We've had very good results so far."

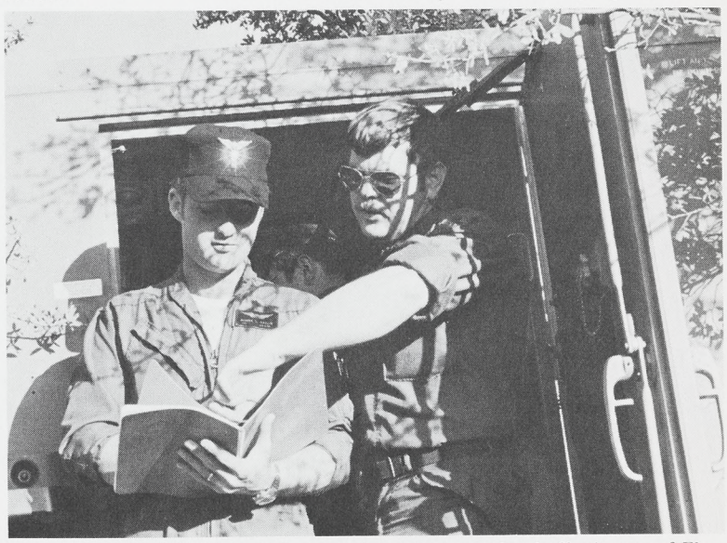
Lt. Michele Lepiece, training officer for the wing, concurred: "It is very good equipment, and we are waiting for the first installation."

BAF's transport aircraft are attached to the 15th Wing, and operate out of Zaventem, the civil airport also, some 10 miles from Brussels. They fly missions worldwide and often to the U.S., Lepiece said.

Four members of the visiting group were from the maintenance section of the wing, and two others from the Belgian Air Force technical school.

Navy Selects Northrop F-18

The Navy announced on May 2 selection of the team of McDonnell Douglas and Northrop to develop the Navy's new Air Combat Fighter to be designated the F-18. **(See story, page 2.)**



AIDATS FIELD TESTS by U.S. Army determine operational effectiveness of Electronics Division's data link system during rigorous trials in the Arizona desert this month. Here, Captain Michael O'Byrne, operational test officer, U.S. Army Intelligence Center and School, Ft. Huachuca, discusses upcoming night reconnaissance mission with OV-ID Mohawk pilot Warrant Officer Roger Catlin. For report on windup of AIDATS testing, see next issue of *Northrop News*.

McDonnell Douglas/Northrop Team to Develop Navy's F-18

The McDonnell Douglas/Northrop team has been selected to develop the U.S. Navy's new Air Combat Fighter.

McDonnell Douglas/Northrop were awarded short term engineering contracts of $4.4 million and General Electric, which will build the engines, received a contract for $2 million to continue engineering design studies.

The decision to proceed to full-scale development is being reviewed by the Secretary of Defense. If this review is approved and Congress funds the first installment of $110 million in the fiscal year 1976 budget, the Navy will enter into contracts for research and development aircraft and engines.

The Air Combat Fighter, to be called the F-18, is based upon Northrop's design for the F-17. Northrop is teamed with McDonnell Douglas as an associate contractor for the F-18 program.

Northrop will share in approximately 30 per cent of the development effort and about 40 per cent of the planned production program.

Over the past 20 years the two companies have established an unparalleled record of on-time, on-performance, and on-cost delivery of more than 6500 tactical fighter aircraft.

F-18 Specifications

The McDonnell Douglas/Northrop F-18 Navy Air Combat Fighter will be fully carrier suitable and capable of speeds in excess of 1.5 Mach, a radius of action of more than 400 nautical miles and a combat ceiling of more than 45,000 feet.

Specifications for the F-18, which is a derivative of the Northrop F-17:

Dimensions:	**Length: 55 ft., 7 in.** **Height: 14 ft., 6 in.** **Wingspan: 37 ft., 6 in.**
Propulsion:	**Two turbo-fan engines (F-404-GE-400)** **Thrust: 16,000 pound thrust class**
Armament Payload:	**Two AIM-9 and two AIM-7 missiles and one 20 mm rapid firing M-61 gun. The NACF is capable of carrying over 13,000 pounds of external stores on nine store stations with full internal fuel.** **External stores include missiles, munitions, and fuel tanks.**
Speed:	**In excess of Mach 1.5.**
Radius of Action:	**More than 400 nautical miles on internal fuel.**
Ferry Range:	**More than 2000 nautical miles.**
Crew:	**Single place.** **Some two-place variants will be built.**
Weights:	**Fighter mission take-off: 33,000 pounds.** **Maximum take-off: over 44,000 pounds.**
Thrust-to-weight ratio:	**Greater than 1.**
Flight controls:	**Electronic fly-by-wire with mechanical backup.**
Ceiling:	**In excess of 45,000 feet.**

Company Reports Increases in Both Earnings and Sales for First Quarter

Northrop reported a 13 per cent increase in sales and an 85 per cent increase in net income for the first quarter of 1975.

Net sales were $213,582,000 compared with $189,132,000 in the first quarter of 1974. Net income for the first quarter totaled $4,694,000 compared with $2,534,000 for the first three months of last year. These earnings are equivalent to $1.27 per primary share, an increase of 95 per cent over the 65 cents in earnings per primary share for the same period last year. Fully diluted per share earnings were $1.11 for the first quarter compared with 58 cents per share a year ago.

Northrop Newsmakers

The Northrop News would like to hear of Northrop employees' deeds and achievements, both on the job and in the community, for the Northrop Newsmakers column. Contact your editor. Editors are: Ivy Edmonds, Electro-Mechanical Division, ext. 516; James Ramsey, Electronics Division, ext. 244, Tom Quintana, Aircraft Division, ext. 4870; Park Irvine, Ventura Division, ext. 1163; or Rosemary Hussey, managing editor, ext. 4273.

• **Pat Schreiner,** Industrial Relations Compensation representative, Ventura Division, is a member of a special committee of the Ventura County Taxpayers' Assn. which is studying the wage structure of county employees versus those in the private sector.

• **John Walti,** Aircraft Division Design Producibility Engineering, has been elected to the office of rear commodore of the Association of Santa Monica Bay Yacht Clubs, an organization representing 13 yacht clubs and 12 fleets.

• **Anwar A. Baky,** Northrop Services, Inc. (NSI), Houston, recently became a United States citizen. Baky was born in Egypt and came to the United States in 1969. He joined NSI in 1973.

• **Scott H. Biddick** has been appointed manager of the newly created Contracts Department of Northrop Services, Inc. Biddick has been with Northrop since 1957 in Contract Administration with the Electro-Mechanical Division.

• **Chiquita Sorrels** attended the Defense Industrial Security Management Course. Ms. Sorrels, Northrop Services, Inc., Systems Management Group, took the course to prepare for more direct responsibility for day-to-day security operations.

• **James Penrod,** has been appointed vice president of Finance for Wilcox Electric, Inc., a Kansas City-based subsidiary of Northrop.

• **Dolores Watson,** secretary, Aircraft Division Proposals, and member of the Huntington Park Women's Club, won a local and district knitting competition for the second year in a row.

• **Gaston Kent,** Aircraft Division director, Military/International Acquisitions, Military/International Contract Management, has been appointed to the Executive Associates Program of Hawthorne Community Hospital.

• **Earl Yavner,** member of the technical staff, Advanced Components, PPD, has been elected a director of the Paul Revere Chapter of the Society of American Value Engineers.

• **Fred Hallock,** PPD materials engineer, was honored by the American Society for Metals recently for having been a valued member for the past 25 years.

• **John Holm** has been named manager of Tool and Methods Engineering at the Ventura Division.

• **James W. Gardner,** appointed director, Contracts Management, Electronics Division Palos Verdes. **James P. Coyne,** assigned as director, Major Subcontracts, Electronics Division. Both report to Frank Caramelli, manager, Contracts Management Dept.

'THE WINNING HAND,' a barbershop quartet that includes Northrop's Bob Wachter, center, Aircraft Division representative, Eastern Regional office in Arlington, Va., sang for President Gerald Ford at the White House recently. The Arlington foursome entertained at the retirement party for Maj. Gen. Dick Lawson, White House military assistant, and staffers who enjoyed their performance, later arranged for them to sing a tune for the President and a few close aides. The song that brought on the presidential grin was 'Standing on the Pier Handing Out Doughnuts.' Official White House photo by David Hume Kennerly.

MEMBERS OF THE CENTREX implementation team responsible for behind-the-scenes planning and execution of activities necessary to implement the communications system are, standing, from left, Dick Wood, management services; Jack Keeper, Pacific Telephone representative; Ben Chinn, telecommunications; Eric Von Hurst, division motivation; and Duke Smith, communications engineering. Seated from left, Guy Langsford, information systems; Gwen Nadeau, industrial relations; Bob Rothstein, communications engineering; and Ruth Griffin, switchboard operations.

Aircraft Division to Have New Telephone Number

C-Day at the Aircraft Division is Monday, June 2. On that day the changeover to the CENTREX (Centralized Telephone Exchange Service) will be fully implemented.

Northrop's new telephone number at Hawthorne will be 970-2000 and every section within the Hawthorne, Mariposa and Torrance facilities will have direct dial numbers.

"Don't just assume your new extension is simply the old one with the 9-7-0 prefix before it," warns Dick Wood, CENTREX implementation team chairman. "Be sure to check the cross reference directory which has been distributed to all sections. More than likely the person you are trying to reach will have a different extension."

Employees will still dial four-digit numbers within the division but will be using new dialing procedures for placing tieline calls to other facilities as well as for transferring incoming calls.

Personnel at other divisions are reminded to check their newly revised telephone directories for tieline numbers that will become effective on June 2. Only the tieline numbers used for reaching the Aircraft Division from other facilities will remain the same.

Below are the new tieline dialing numbers for all facilities in Southern California.

A Letter from the Thunderbirds

Thunderbirds

PHONE (702) 643-4018

24 April 1975

Mr. Jim Anthony
Northrop Corporation
Aircraft Division
Talon Service News
3901 W. Broadway
Hawthorne, CA 90250

Dear Jim,

We enjoyed the story written by Sgt Warren Harris on the Aggressors, and agree they are "something else". Few units within the Air Force enjoy the respect of peers that the 64th FWS does. The Thunderbirds are honored to be stationed with them.

Besides the burning professionalism that marks the Aggressors, the most obvious thing we have in common is the T-38. The T-38 was not automatically accepted as a Thunderbird by this unit. It had to prove itself to us in the same manner that our people do.

As the Thunderbirds approach our first anniversary of the "Talon Era", we find that our respect for the Talon is of such magnitude that it is rubbing off. In a headline carried in its Air Show souvenir edition of April 12, the Patrick AFB newspaper said "Thunderbirds tag Talon as 'tops'".

We want you to know that we think the people at Northrop have built a beautifully performing, aesthetically pleasing, and fantastically reliable airplane. We are proud of our nine Talons and every man and woman who had a part in designing and building them.

CHRIS G. PATTERAKIS, Major, USAF
Commander/Leader

USAF AIR DEMONSTRATION SQUADRON • NELLIS AIR FORCE BASE • NEVADA 89191

JIM ANTHONY, editor of the Talon Service News, recently received the above letter from the Thunderbirds, the USAF Aerial Demonstration Team. Even though it was addressed to Anthony, he offered it for publication in the Northrop News so everyone at Northrop knows how the Thunderbirds feel about the T-38 as they approach their first anniversary of the 'Talon Era.' 'The Aggressors' also fly T-38s as part of the USAF 64th Fighter Weapons School's program to train and better prepare American pilots to cope with enemy aircraft in air-to-air combat.

NORTHROP TIELINE SYSTEM
SOUTHERN CALIFORNIA FACILITIES

TO

FROM	ALAMEDA	ANAHEIM	CENTURY CITY	*DAYTON	HAWTHORNE	JOHNSON PROPERTY	LONG BEACH	NORTHROP EAFB	PAGE COURT	PALMDALE	PALOS VERDES	*USAF EAFB	VENTURA
ALAMEDA	–	7-101+	7-102+	7-0	7+	7-108+	7+	7-104+	7-101-8+	7-105+	7-106+	7-0	7-107+
ANAHEIM	7-103+	–	7-102+	–	7+	7-108+	7+	7-104+	8+	7-105+	7-106+	7-0	7-107+
CENTURY CITY	7-103+	7-101+	–	7-0	7+	7-108+	7+	7-104+	7-101-8+	7-105+	7-106+	7-0	7-107+
JOHNSON PROP.	7-103+	7-101+	7-102+	–	7+	–	7+	7-104+	7-101-8+	7-105+	7-106+	7-0	7-107+
NAD HTH & L.B.	103+	101+	102+	0	–	108+	–	104+	101-8+	105+	106+	0	107+
NORTH EAFB	7-103+	7-101+	7-102+	7-0	7+	7-108+	7+	7-104+	7-101-8+	7-105+	7-106+	–	7-107+
PALMDALE	7-103+	7-101+	7-102+	7-0	7+	7-108+	7+	7-104+	7-101-8+	–	7-106+	7-0	7-107+
PALOS VERDES	7-103+	7-101+	7-102+	–	7+	7-108+	7+	7-104+	7-101-8+	7-105+	–	7-0	7-107+
VENTURA	7-103+	7-101+	7-102+	–	7+	7-108+	7+	7-104+	7-101-8+	7-105+	7-106+	7-0	–

*MANUAL TIELINES

NOTE: AFTER DIALING 3 DIGIT TIELINE ACCESS NUMBER, WAIT FOR SECOND DIAL TONE BEFORE DIALING EXTENSION.

Still Time to Sign Up For Savings Bonds Before May 30

The annual Savings Bond Campaign at Northrop which started May 1 is scheduled to conclude May 30.

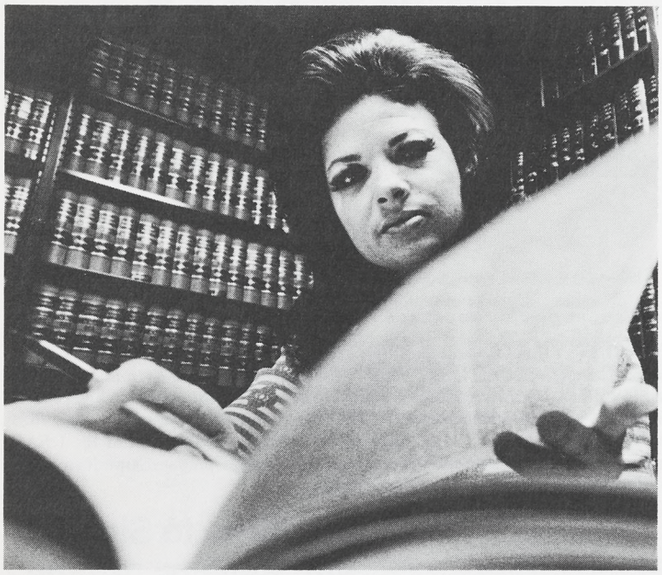
"The response from our employees has been very gratifying," said R. J. "Dave" Davidson, who is coordinating the corporate-wide campaign for Northrop. "Everybody wants to save, and payroll savings is not just another deduction, but is a systematic plan for saving that makes your paychecks grow," stated Davidson.

He continued, "It offers a wide range of allotments to fit any size paycheck. You can save as little as 50 cents a week, or as much as you really want."

Division coordinators are making a final effort to get to all of the employees to put their division over the top.

KATHY BABCOCK, Aircraft Division, is a business major and will earn her associate of arts degree in June from El Camino College.

JANICE SUERETH enrolled in Roger Williams College last year. Going back to school has helped her to learn more about her job at Precision Products Department.



SHARON ROGERS, Corporate office, received her degree from University of West Los Angeles School of Paralegal Studies and is now a legal assistant.

PAT WOODS AND ELEANOR SCARSDALE, Electro-Mechanical Division, receive professional certificates in industrial relations from James M. Ricketts, general manager, left, and Richard Stuffler, manager, Industrial Relations.

Advancing Through H

GAINING higher education used to be considered almost impossible for the full-time worker both from a schedule standpoint as well as the financial aspects.

Northrop employees are finding a solution to at least half of the problem of trying to gain higher education through the Educational Refund Program.

The Educational Refund Program reimburses qualifying employees a major portion of their expenses incurred while seeking degrees or certifications in areas of study which are determined to be beneficial to the individual's specific job and related to Northrop's present or anticipated activities and operations.

Special Consideration

Of special consideration for qualification under the plan is whether the degree or study program contributes to the individual's improved job performance or will qualify the applicant for a subsequent assignment that is logically related to his present employment.

The refund program is attracting more and more women each year, reports Norma Conrad, Aircraft Division program coordinator. "The women in our work force have become more aware of job opportunities and benefits, as a result many more are returning to school under the refund program," she said.

Norma herself just recently completed the UCLA extension course for certification in industrial relations.

Altogether, six university extension courses were offered to employees throughout the Aircraft Division this year and more courses will be added in the fall to help employees get back into school.

Kathy Babcock, contract analyst, Aircraft Division, has found a way to improve herself through education and confides, "It helps to have some financial support along the way."

Kathy leads a busy life by attending school at El Camino College three nights a week.

"I started using the Educational Refund Program because of the advantages it has to offer. I have since stopped using it as I was taking courses which weren't related to my field. But after transferring to Cal State Dominguez Hills later this year, I plan to re-apply." Kathy is a business major and will earn her associate of arts degree in June.

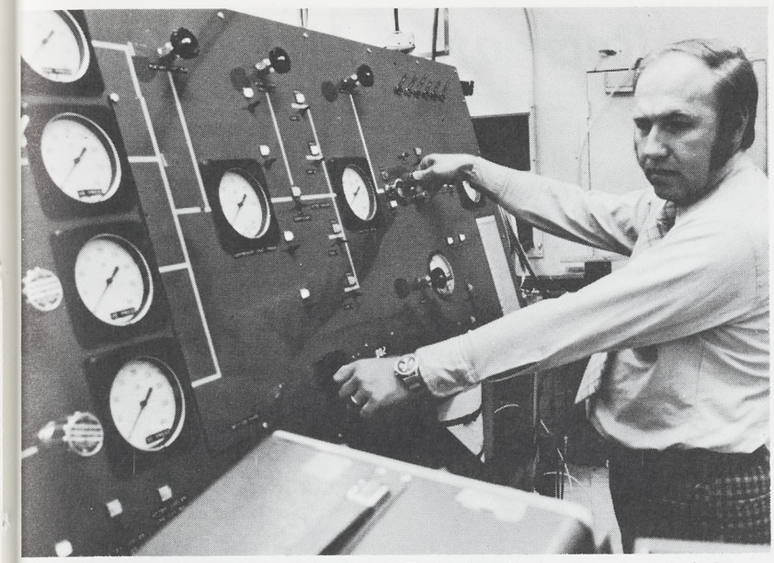
Thus far this year, 407 employees have applied for and received reimbursement for study or degree programs and 59 of these are women.

At the Electro-Mechanical Division the latest to take advantage of the Northrop Educational Refund Program are Eleanor Scarsdale and Patricia Woods, both of whom received their professional designation in industrial relations.

Receive Certificates

Mrs. Scarsdale is a personnel placement associate and Mrs. Woods is a compensation analyst. They received their certificates from UCLA after taking eight professional courses, attending classes since 1973.

Four Electronics Division employees enrolled in the program are expecting degrees in June. From Hawthorne are Pamela Roehrig, senior cost estimator, Contracts and Estimating; John Roehrig, director, Finance; Marcia Marshall, Avionics Marketing; and Raymond Nowell, Strategic Missile and Space Systems, Palos Verdes.



ULF BRYNJESTAD, Northrop Research and Technology Center, has two master's degrees and is now working on his Ph.D. at UCLA majoring in systems management.

Higher Education

For Pamela and John Roehrig, receiving their M.B.A. degrees simultaneously from Cal State Dominguez Hills in June is the culmination of 21 months of hard work and personal sacrifice. But they feel the result is worth all the spare time they had to give up.

"It's very rewarding personally," says John, "to complete an educational program of this type. The real value in it, is that it exposes you to current academic thinking and provides new prospective on your job. It upgrades and refreshes your techniques, and is very useful."

Direct Help in Job

Pamela agrees. "It's been a direct help in my job," she says, "and I feel it had a good deal to do with a recent promotion. I felt that as a female, the best way to advance myself would be through advanced education. The Northrop program has really assisted me in this goal."

Sharon Rogers was a legal secretary in the Corporate Legal office for 4½ years. Wanting to further her career in the legal field, she too felt the way for advancement is through education.

Last August, she received her certificate of corporate specialist as a legal assistant from the University of West Los Angeles School of Paralegal Studies.

Miss Rogers thinks the Educational Refund Program is a marvelous incentive program. "It affords a tremendous opportunity to those people willing to devote their time, effort and energy towards improving themselves. In today's society, women have every opportunity to advance if they are motivated. For me, it has opened up a totally new professional career. It takes a lot of hard work and many hours of study."

Nina Melton, Ventura Division commercial artist, is studying photography as part of her college courses at California State University at Northridge.

Ulf Brynjestad, project engineer in the Laser Technology Laboratories, Northrop Research and Technology Center, states, "In my opinion, the Educational Refund Program is the number one fringe benefit at Northrop.

"I arrived in the United States from Sweden in 1964 with an engineering degree, but no one seemed to know what it was. It became evident that I would need a degree from an American university and thanks to Northrop's program I was able to enter USC and continue my education."

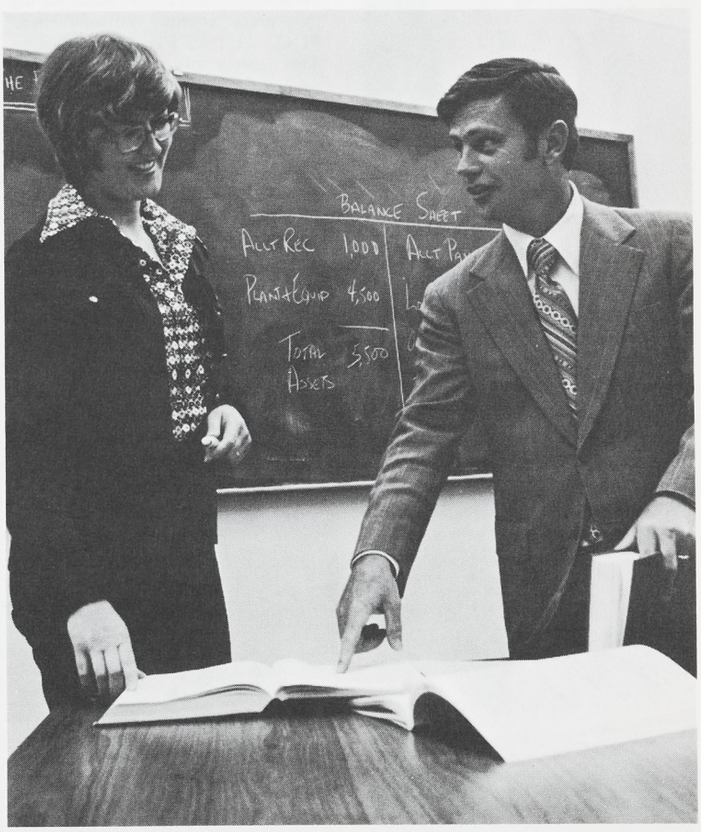
He obtained a master of science degree in aerospace engineering in 1969 and fulfilled the requirements for an M.S. in systems management in 1971. He is now studying for his Ph.D. in engineering at UCLA majoring in systems management.

Wanting to Know

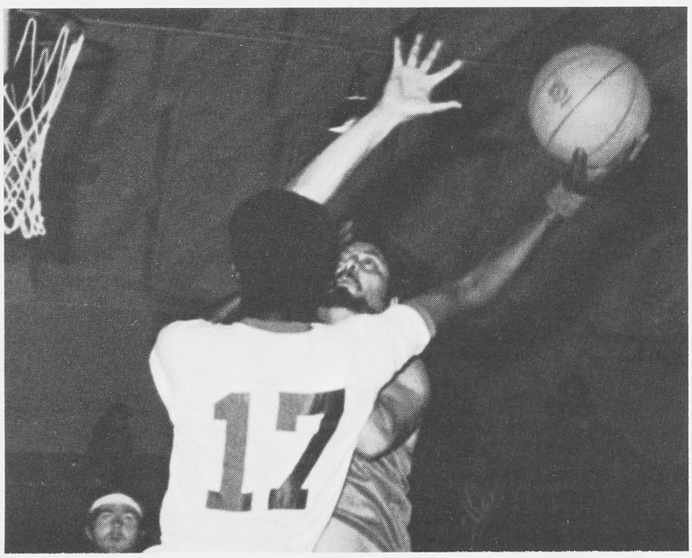
Janice Suereth, electronics technician, decided to enter college after joining Precision Products Department (PPD) in December 1973.

"I became curious and wanted to know more about the 'why' of the product I was working on," she said. "I always knew I wanted to go to college, but I never could really figure out what interested me the most until I began working at PPD." Janice enrolled in Roger Williams College in Rhode Island as a freshman last year working toward an associate's degree in electrical engineering.

NINA MELTON, Ventura Division commercial artist, is studying photography as part of her college courses at California State University at Northridge.



PAMELA AND JOHN ROEHRIG, Electronics Division, are receiving their M.B.A. degrees simultaneously from Cal State Dominguez Hills in June.



Basketball Tournament

AIRCRAFT DIVISION was winner of the third annual all-Northrop Basketball Tournament featuring squads from Ventura, Aircraft, Electronics and Electro-Mechanical Divisions, Palmdale and Corporate office. In final playoff April 26, Aircraft Division won 61-50 and took perpetual trophy away from Electro-Mechanical Division, last year's winner. Pictured above: Chuck Richard '17', Corporate office, hooks basket over Palmdale defender during third-place contest. Palmdale won 51-42. At left: Pat Didier, Palmdale, scores two of his 22 points against Corporate office with pressure from Len Sauter and Richard. Below left: clearing the boards is John Rettberg, left, Electro-Mechanical Division. At right: tip off beginning fourth quarter of championship game has Tony D'Orra '22', Electro-Mechanical Division against Johnny Love, Aircraft Division. Photos by John Lawrence.

Recreation Notes

GETTING INTO THE 'swing,' Yolanda Duran gives Jack Kinzer some tips on hula dancing in preparation for Jack's acting as tour director for the upcoming NRC Hawaii trip. The 15-day tour, beginning July 19, is sponsored by the Electro-Mechanical Division, but is open to all Northrop employees. Call Anaheim ext. 244 for details.

★ ★ ★

Tickets go on sale for the Laguna Art Festival, Monday, June 2. Only 86 tickets priced at $8 are available which will be sold as a ticket and bus package on a first-come, first-served basis for the Thursday, Aug. 21 pageant. Buses leave the Aircraft Division main gate at 5:30 p.m.

Duvall Wins Washington, D.C. Trip

Washington, D.C., will be the site and Memorial Day weekend the time when Palmdale's Scott Duvall continues his effort to bowl his way to Europe.

Duvall goes to the nation's capitol expense-free after besting 24 Antelope Valley male keglers in a recent roll-off for a shot at the nationals.

The competition calls for the highest number of pins over current average in league action. Duvall copped a monthly event with 70 pins over average, then shot a 240, some 87 pins over his regular average.

Memorial Day Holiday

Memorial Day this year falls on Monday, May 26. Northrop facilities will suspend operations Monday, May 26, giving employees a three-day holiday.

HUGH G. KISER, receives 25-year service award from Ben Collins, vice president and program manager, while on overseas assignment. Kiser was originator of the name for the F-5E Tiger II by winning in the 'Name the Plane Contest.'

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Jeep Wagoneer, 1964, a/c, new m/s tires, $1750; motorcycle, BSA 650, $650. 714-249-3719.

Cougar XR-7, 1967, $875: Plymouth, 1966 Fury III 9-pass. wag. $475. 805-259-6570.

Plymouth, 1968 cust. wagon, new auto. trans., a/c, p/s, $400. 213-324-8436.

Mustang, 1970, auto. trans., 302 V-8 eng., r/h, a/c, $1750. 213-540-0070.

Mustang, 1967 Fastback, 289 V-8, stereo tape, $850. 213-865-5131.

Cortina GT, 1968, r/h, $595; Cortina GT, 1970 w/front end damage, $295 or $795 for both. 213-377-2552.

Ford, 1974 Van, auto. 302 cu. in. V-8, 4000 mi., $4100; motorcycle, 1973 750 Honda, Harley 16" rear whl., Wixon fairing, $1600. 213-867-9545.

Pinto, 1972, 4-spd., 42,000 mi., $1750. 213-675-3957.

Chevrolet, 1969 Impala, 2-dr. h/top, 5500 mi., d/brakes, r/h, $1135. 213-325-5639.

Opel, 1971 Manta sport coupe, 4-spd., AM/FM, $1550. 213-454-7585.

Jaguar XR150, 327 Chevy. reblt., 1000 mi., 4 spd., $1500. 714-898-1517.

Buick, 1973 Regal, 2-dr., h/top, full power, 24,000 mi., $3300. 213-675-0128.

Motorhome, 1972 Pride-N-Joy, 20' on Dodge chassis, self-contained, sleeps 6, 360 V-8 eng., p/s, p/b, roof & dash air, other extras, $6500. 213-542-7176.

Pontiac, 1965 Grand Prix, r/h, p/b, p/s, 389 V-8, $500. 213-675-1733.

Firebird, 1973 Trans-Am, 455 C.I.D. 4-spd., 27,000 mi., $3600. 805-482-6945.

Datsun B-210, 1974, 9000 mi., tach., 4-spd., $2800. 213-644-7516.

Mustang, 1965 convt., 289 V-8, AM/FM stereo, $800. 213-478-4148.

Motorcycle, 1970 Harley Davidson Sportster, $1800. 213-375-7303.

Motorcycle, 1974 Kawasaki 750, assume loan or $1500. 213-973-2979.

Chevrolet, 1969 Nova, 59,000 mi., cassette deck, 6-cyl. eng., 3-spd. trans., r/h, $1400. 213-448-3593.

Motorcycle, 1970 Suzuki 500, fairing, eng. & trans., o/haul, $550. 714-772-1423.

Renault, 1957, needs work or use for parts, $60. 213-764-6620.

Triumph, 1968 TR250, $1000. 213-671-4550.

Pickup, 1967 Ford, ¾-ton, camper special, r/h, a/c, auto. trans., $1300; Chrysler, 1969 Town & Country sta. wagon, 4 dr., 6-pass, r/h, a/c, p/s, auto. trans., $800. 213-325-3404.

Chevrolet, 1965 Impala, 2-dr., 283 eng., $350. 213-370-7749.

Chevrolet, 1974 Luv, 4-spd., r/h, 6700 mi., $2700. 714-826-3449.

Datsun 240Z, 1974, a/c, AM-FM radio, 13,600 mi., $4800. 213-341-4272.

Sand Buggie, 1600 cc eng., tires, T trailer & 1971 VW wagon body parts & fuel injection sys., $1200. 714-894-5469.

Datsun 240Z, 1973, auto., many extras, under warranty, $5100. 213-548-3552.

Maverick, 1970, auto., air, 55,000 mi., $1250. 213-860-8746.

Vega, 1971 sta. wagon, 2-dr., a/c, 4-spd., AM radio, 4 cyl., $1495. 213-657-3889.

Mustang, 1974, Mach I, 10,000 mi., $3450. 213-644-2780.

Motorcycle, 1971 Yamaha 250 Enduro, dirt or street, new top end, $500. 213-370-1476.

Camaro 350, 1970, 4-spd., p/b, $1700. 714-524-3937.

Pontiac, 1974 Firebird, 6 cyl., 13,000 mi., under warranty, p/s, AM/FM stereo, 3-spd. stick, $3900. 213-394-5352.

Motorcycles, Yamaha 125cc MX, levers, fenders, ported, milled head, $300; Yamaha, 250cc, dirt, extra tire, $300. 213-398-2314.

Vehicles For Sale

Chevrolet, 1970 Caprice, 4-dr., 350 eng., a/c, p/s, p/b, p/w, AM/FM, $1000. 213-320-5281.

Volvo, 1972, AM/FM radio, air, assume approx. $1700 Credit Union loan bal & $1000.714-778-4517.

Mustang GT, 1966, 289 eng., auto., air, r/h, $500. 213-378-9722.

Plymouth, 1971 Satellite, 4-dr., $1000. 213-973-1581.

Chevrolet, 1971 Chevelle, 307 eng., auto., 81,000 mi., $800. 213-889-4705.

Chevrolet, 1964 Nova, 327, 400 h.p. Edelbrock, erson, holley, scattershield, hurst, $600. 213-371-6698.

Camaro SS, 1968 396 eng. reblt., 4-spd., 411-posit, p/s, p/b, air, $1200. 213-322-7625.

Motorcycle, 1971 Yamaha 360 MX, Modesett down pipe, stock up pipe, $480. 714-826-9468.

Miscellaneous For Sale

Stereo System, amplifier, Pioneer SX 77, Electrovoice spkrs., auto turntable, Garrard, tape deck, TEAC A-1030, $750. 213-379-3313.

Kitchen set, 4 orange bentwood chairs, table w/leaf, white, $80; crib & dresser, white Babyline, $90. 213-545-4403.

Sound Equipment, Monaural incl. Bogen R-620 AM/FM tuner, DB 130 amplifiers, & Newcomb KXLP-30, Sherwood S-3000II FM tuner, record player, Garrard RC 88/4, $10 ea. 213-277-5129.

Golf Clubs, matched set, alum. shafts, 1-3-4 woods, 9 irons, putter, Ajay bag, shoes, $90. 714-995-3436.

Record Player, General Electric, $25. 213-371-7052.

Magazines, National Geographics, 1963 to 1975 complete, $25. 714-637-7662.

Tent Trailer, Wards, sleeps 4 adults, extra-thick foam mattress, spare tire, crank-up tongue hitch whl., $175. 805-498-2787.

Diamond Ring, women's ⅓ carat, brushed 14 k. gold band, $230. 213-375-4747.

Workbench, hvy. duty wood, 8' long, 4 drwrs., top & bottom shelf, $45. 213-377-7317.

Dryer, elect., $30; Formica table, 42", $10. 213-326-6200.

Typewriter, Underwood elect., 13½" carriage, elite type, seldom used, $100. 213-530-5651.

Copier, 3M desk top thermofax, like new, $75; cartop carrier, zippered cover, $35. 714-524-1531.

Golf Clubs, left-handed, woods 1 - 5, irons, 2 - 9, & wedge, $50. 213-325-8559.

Bass Viol, ¾-size Johan Rauner, pre-war professional instrument, maple veneer, blonde finish, bow, $495. 213-377-2552.

Bicycle, men's 21" 5-spd., rack & lock, $60. 213-645-3381.

Boat, w/trailer, 19', Evinrude Rogue inbd./outbd. 210 h.p. OMC eng., 100 hrs. on new eng., $3000. 213-372-0609.

Organ, Conn, dble. keyboard, elect., $500. 213-630-4188.

Guitar, 6-string Acoustic, $60. 213-324-2130.

Pups, great Dane, AKC reg., $150-$200. 213-379-1881.

Travel Trailer, Ideal, 22' self-contained, roll-up awning, fact. inst. refrig., a/c, dual whls., $2400. 213-672-3883.

Air Conditioner, 14,100 b.t.u., 110 v. window refrigeration unit, used 1 summer, $175. 213-641-5546.

Trumpet, Yamaha student model, case & mute, $85. 213-377-5089.

TV, 19" color, RCA, 6 yrs. old, portable w/stand, $150. 213-675-2005.

Drums, $175. 213-321-1297.

Cemetery Lots, 2 dble. interment, Inglewood Cemetery, El Portal Sect., $1500. 213-676-1985.

Sailboat, 26' Seabird, 8 h.p. diesel inbd., RDF, anchors, many extras, bottom new paint, $4200; mini bike, new tires & parts, 2½ h.p. eng., $47.50; organ, 4-rhythm, C&G chord, Sears, $95. 213-320-8297.

Hair Dryer, Lady Schick consolette, $15; washing machine, Lady Kenmore, 3-spd., 7-cycle, $25. 213-326-6780.

Pre-Amps & amps, 2 ea., Heathkit, $40. 213-376-4831.

Washer, G.E. & dryer, gas, coppertone, never used, $500. 213-973-2979.

Dryer, Whirlpool elect., delux model, lge. cap., $65. 213-542-2651.

Headboard, walnut king size, $35; washer, Kenmore port. 3-cy., $60; dryer, elect., $40. 213-973-0956.

Miscellaneous For Sale

Stoves, Kenmore elect. self-cleaning oven, white, $175. 213-644-2489.

Habitrail Cage, lge. with teddy bear hamster, $15. 714-968-7987.

Wheels, 4 stock, for 74 Dodge van, $15. 213-941-1865.

Kitchen table, chairs, white round table w/yellow high backed naugahyde chairs, $25; dishwasher, portable, $25. 213-479-8774.

Game Table, solid walnut, 4 uphol. chairs, $325. 213-545-6387.

Camera, 35 mm SLR, 50 mm fl. 7 auto. lens, 2x ext., 75-205 mm f3.5 vivitar, auto. tele. zoom lens, $180. 213-375-1282.

Box Springs & mattress, queen size, $40. 213-370-7749.

Lanterns, 2-mantle Coleman, 2, $8 ea. 213-376-5455.

Shotgun, Winchester Model 1200, modified choke, used one season, $85. 213-373-7650.

Sailboat, Catalina 22, cruiser, sails, outbd. motor, trailer, all standing rigging & running gear, many extras, $3400. 213-541-6955.

Trailer Hitch, Reese, light plug-in, hyd. control, $35. 213-677-8868.

Sofa, chair, coffee table, end-tables, 2, lamps, 2, $400. 714-828-1011.

Cabin Tent, 8x10 Coleman, $60; catalytic heater, Coleman, 3500 b.t.u., $15. 213-320-8127.

Bicycle, girls sidewalk-type w/training wheels, $12. 213-374-5113.

Radio, C.B. side band, Pace 1023, other C.B. radio equipment avail., $250. 213-375-6467.

Sofa, 8', quilted, blue & green, modern, $75. 213-676-8290.

Boat, 19' Chriscraft cabin cruiser, inbd., $400. 213-676-0053.

Tire, tubeless w/s/w, 6.95x14, $20; TV, Zenith portable b&w, $20; couch, $10. 213-834-5665.

Player Piano, antique, orig. wood. new insides & keys, $3000; bicycle, 10-spd. men's imported, rode twice, $85; piano roll cabinet, antique, $400. 213-347-2665.

Boat, 1971 Glastron V156, bow-rider, 85 h.p. Evinrude, recent tune-up, new prop, full cover, convt. top, $2695. 805-498-2307.

Crib, Simmons mattress in box, $20. 213-374-4703.

Sewing Machine, Singer Zig-Zag, will incl. portable carrying case & buttonhole attach., $100. 213-632-3045.

Camera, Bolex, 16mm, w/pan cinor 200m lens, leather carrying case, 150mm 1.4 lens attach., $300. 714-892-6526.

Golf Clubs, set, Spalding reg., 3 woods, 8 irons, putter, $70. 213-676-0633.

Tent Trailer, Apache, $225. 213-328-3306.

Sofa, 2-pc., straight & curved sects., 9', blue, $85. 213-396-5837.

Volkswagen parts, 1962, doors, $25 ea.; rear seat, $10; front hood, $7, 213-831-9589.

Wheels, 4 mag, 10" w., 6-lug, 4-L 60-15 Firestone racing profile extra wide new tires mounted, $250. 213-375-4527.

Guns, Smith & Wesson Model 37 Chief 38 Special, $155; Smith & Wesson Model 67, Stainless 38 Special, $200. 213-644-6658.

Golf Clubs, men's woods 1, 3, 4, 5 Arnold Palmer signature std. swing, $20. 213-530-4207.

Dinette set, 5-pc. Spanish, mar proof, $35; coffee table, mar proof, dk. wood, $10; studio couch, corner group, $70. 213-371-2783.

Airplanes, BD-5's, #43 & #44 lge. engs., dual ignitions, wings, long & short, lg. jigged, elect. sys., $7200 or sell separately. 213-860-7936.

Accordion, 120 bass La Scala w/case, $150. 213-421-7553.

Pup, afghan, 9 mo. old female, coffee color, $50. 213-678-2033.

Typewriters, manual, Remington & Smith Corona w/case, $25. ea.; jon boat, 12' alum. w/camper loader & oars, $95. 213-679-1980.

Stove, apt. size, gas, 4 burners, white, 20" w. x 24" dp., $60. 213-677-7421.

Pool Table, 8' x 4', complete w/balls & cues, $125; figure skates, boy's, size 6, $10. 213-378-2790.

Freezer, upright, $100; helmet, Bell, 7¼ size, near new, $25. 213-644-7376.

Typewriter, portable Smith Corona w/carrying case, $40. 213-641-2244.

Miscellaneous For Sale

Dog, Dalmatian, AKC reg. 1½ yr. old female, papers, $75. 714-549-9920.

Coffee Table, 2 end tables, maple, $35; kitchen table, 3 chairs, chrome, $20. 213-644-1768.

Console Stereo, Garrard turntable, AM/FM, 4 & 8 track tape, Spanish wood, $200. 213-973-5448.

Stereo System, FM/AM-phono., $200; motorcycle helmet, used once, $45. 213-672-2338.

Wanted To Buy

Bean Bag Chair, lge., green, brown or tan, good condition. 213-374-0752.

Outboard Motor, gas, 3 h.p. or less, good condition. 213-377-4180.

Electronic Organ, sgle. manual w/approx. 4 octaves, working or not. 213-530-0671.

Baby Clothes & baby furniture. 213-370-9119.

Picture Dryer. 213-371-6758.

Playpen, used, good condition. 213-831-9636.

Boat Trailer, small. 213-538-2806.

Mustang or Cougar, 1965-1970, w/small V-8, auto. trans. 213-597-5232.

Utility Trailer. 213-676-9385.

Cartop Carrier, encl., fiberglass or metal, lockable. 714-536-8068.

Cowl Induction Hood, for 1969 Camaro, metal, not fiberglass. 213-892-3541.

Mufflers, pair, standard stock, good condition, for 1971 Honda CB 450 motorcycle. 213-633-3993.

Piano. 714-956-7838.

Volkswagen, 7-pass. van, 1968 - 1970 model, running or not. 714-846-6314.

Pickup Body, cheap, fair condition. 213-422-3932.

Carburetor, 4-bbl., & manifold for 1973 Ford 390 eng., or trade 2-bbl. carb. & manifold plus cash for 4-bbl. 714-826-9468.

For Sale or Trade

Mag Rims, 4-lug, $15 ea. or trade for mags, 6-lug. 213-372-1691.

Wheels & hub caps, 4 chrome w/fair tires, 15x7 w/5-on-5 hole pattern, fit late Chev. van or Oldsmobile, $8 ea. or trade for any item of equiv. value. 213-329-4090.

Rentals Wanted

College Couple, responsible, married, live in your home during summer while you vacation, care for house, lawn & pets, will furnish references. 213-679-6247.

Garage Apartment, close to Northrop, partly unfurn. 213-675-1000.

Personals

Thank you for your thoughtfulness & sympathy on the passing away of my father. Your concern was deeply appreciated. CHUCK BLANEY & FAMILY.

My sincere thanks to all my friends for making my last day at Northrop a memorable one. Also, for the gifts, & nice luncheon upon my retirement. E. H. KALTHOFF.

I would like to thank all my friends & fellow employees for their kind sympathy & understanding during our recent loss. TOM ALBERICCI & FAMILY.

I wish to thank everyone who extended so many kindnesses to us during Dwight's illness & passing. BETTY STEWART.

Many thanks to all my friends & coworkers for the wonderful luncheon & fine gifts upon my retirement. I will always remember all of you. CLIFF QUIGLEY.

My sincere thanks & deep appreciation to all my friends at the Aircraft Division for a memorable retirement party & gifts. GERTRUDE WHEELER.

To all of Randy's friends, our sincere appreciation for all your kind thoughts & contributions to the Cancer Society in memory of him. MACY McCARL & DAUGHTERS SANDY, LINDA & RANDI KAY.

Thanks to everyone for the years of working with you at Anaheim. Lilyan & I appreciated the going-away parties, good wishes & gifts. VERN FRYE.

I want to thank all my friends at Northrop for the flowers, cards & sympathy when my wife, Dottie, passed way. BILL GREEN.

My sincerest thanks to my many friends for all the beautiful flowers & cards received while I was in the hospital. NANCY MYHRE.

Alterations, women's clothing, reasonable, local. 213-644-2803.

Free

Kittens, calico & manx. 213-644-5348.

Ride Offered - Wanted

Ride or riders, El Monte area, 7 a.m.-3:42 p.m. Aircraft Div., ext. 1095, 213-280-5073.

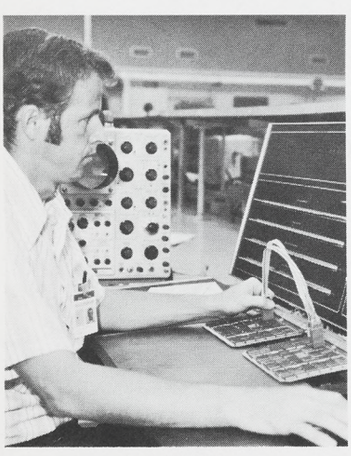
SAFETY, THEIR BUSINESS: Workman's Safety Committee, Hawthorne facility, displays first-place award received from Greater Los Angeles Chapter, National Safety Council, in business and industry contest. Award, recognizing a 1.08 lost-time disabling injury rate compared to an 11.46 average for 728 participating companies, reflects top performance in category of 1000-2000 employees. Group members are left to right, Carl Chapman, Joe Pisch, Lucy Tamariz, Joe Rahiya and Buck Pennington, Security and Safety, Lew Adkins, Mary Wiesner and Harry Gray.

Suggestion Awards Top Over $2000 During Year

More than $2000 has been awarded so far in 1975 to Electronics Division personnel submitting ideas in the Employee Suggestion Award Program, reports Sheryl Lee, program coordinator.

Top award since January is one for $498 received by Jim Wood (see photo). Wood, engineering technical assistant, Linear Systems Test unit, also received a cash award for $448 for another suggestion which had been reevaluated, bringing his total for the year to $946.

Wood's first award was for developing a new unit to isolate malfunctioning circuits, resulting in time and money saved. His other award winning suggestion was to build a test fixture to sample select lots of transistors prior to installation in a hybrid circuit, which resulted in greater yield and lower failure rate.



JIM WOOD

Edwin L. Smith, air conditioning mechanic, was awarded $239 for his idea to install a time clock and microswitch to cut off and automatically control the cooling system of the Calibration Lab at night, thus saving hundreds of dollars per month. Not a newcomer to the Suggestion Program, Smith has earned $626 in an award received last June.

Buckey Receives $150

The Fabrication unit, Manufacturing Group, produced an award winner in D. L. Buckey, who received $150 for his idea to fabricate a more efficient lap fixture, resulting in a saving in man-hours per part. Don Hoff, Operational Support Group, won a $185 award for his suggestion to have an in-house stat camera installed for publication art, which has more than paid for itself in time and cost saving.

Another major Suggestion Award winner was Tony Amundson, Environment Test unit, who received $130 for his idea to develop or procure a hand-held lead bender, a type of pliers used in electronic assembly. Amundson is another double winner, also receiving a $35 award.

Other award winners this year, and amounts received for their ideas were: Edward Sullivan, $43; Tom Grettum, $35 and $30; C. P. Moyer, $30; Sharon Ferrante, $30; Gloria Viles, $30; Gary Goldbaum, $99; Fred A. Robb, $61; Marie Stehle, $25; and Ron Beye, $25.

People and Events

The second blood drive of 1975 is set for Monday, June 2 at Hawthorne, Arnah Pakes, Medical, reports. Time at the Hawthorne Facility Annex 106, will be 9 a.m.-1:30 p.m. Blood donor cards will come out with paychecks on May 23 for Hawthorne employees.

Avionics Operations Department conducted a management development program featuring six sessions, winding up April 30. Bali Mahajan reports this is the first time Electronics Division operations supervision has met with lateral organizations and exchanged ideas. Sessions were held on effective communication; management principals, cost estimating/contracts; financial management; cost control, and project management.

Edward D. Bardon has been appointed supervisor, Photo Lab unit, within the Security, Safety and Publications section. Bardon reports to K. R. "Ray" Smith, general supervisor, Photo, Reproduction, and Technical Data branch, and is located at Hawthorne.

James L. Zwickel, appointed supervisor, Reliability and Component Engineering unit, reporting to Lawrence Beuder, chief, Product Integrity group.

Loren L. McAnelly, appointed supervisor, Maintenance, Palos Verdes facility, reporting to Robert Arrasmith, chief, Maintenance and Construction Group.

NRC Calendar

The NRC is featuring its popular Las Vegas night on Saturday, June 8 at the NRC Clubhouse, Del Wyatt reports. Tickets are $1 in advance, $1.25 at the door for an evening featuring Las Vegas-style gambling, and a square dance demonstration by the Square Dance Club. There will be food, beverages and door prizes.

* * *

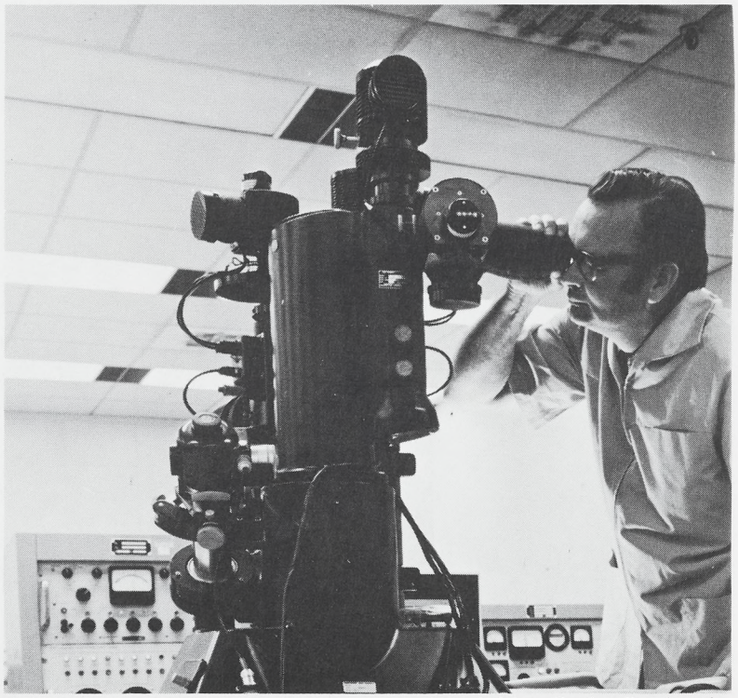
Personnel Activities has made arrangements for the Freddy Martin event at Avalon, Catalina Island, July 5. Leave Long Beach via the Great White Steamer, SS Catalina, 7 p.m., arrive Catalina, 9 p.m., dance until 2 a.m., and return to Long Beach approximately 4 a.m. Cost is $14.15.

* * *

The Royal Lipizzan Stallion Show is coming to the Forum and Personnel Activities has tickets for the Sunday, July 6, 2:30 p.m. performance. Prices are: regular $6.75, group $5.25 and youth $3.50.

* * *

NRC Ski Club meeting is scheduled for May 29, Thursday, 8 p.m. at Lococo's in Manhattan Beach. Contact Terry Dickson, commissioner.



AIMING FOR STARS, John Warsop, electronic technician, Service Repair unit, Hawthorne, calibrates an astroinertial guidance system for the U.S. Air Force using a star signal simulator. A device that tracks the stars in broad daylight, astroinertial is considered the most accurate form of navigation available today. Electronics Division's Avionics Department continues to pursue advances in this field with an eye towards a smaller, lightweight, more accurate device at reduced costs.

MX/AIRS Win Called Division Team Effort

Dr. W. L. 'Bill' Parker

George Fritzel

Nils Kolderup

Bob Hughes

Andy Tyszkiewicz

It took a team effort from different elements of the Electronics Division to win the highly important MX/AIRS contract against two other top competitors, and "an outstanding technical proposal" was the key element in gaining the award.

This was the message conveyed by David N. Ferguson, corporate vice president and general manager, to a meeting of division management personnel on June 2.

"I believe this (the MX/AIRS contract) is probably the finest win we could get at this period of time in the Electronics Division," Ferguson said. "I also believe very strongly it was an outstanding team effort.

Proposal Leader

"The SMSS group (Strategic Missile and Space Systems Department) under Dr. Bill Parker was the leader in the proposal," Ferguson said. "The Avionics Department supplied the hemispheres and equatorial rings to MIT (under the MPMS program) gaining that reputation. They also supplied the most important ingredient on the proposal — people — and they opened their facilities for tours by top Air Force personnel," he added.

Ferguson went on to cite the important contributions to the win made by the Precision Products Department, Norwood, Mass., and the Defense Systems Department, Rolling Meadows, Ill., along with the division and field offices, giving a special accolade to Jim Elder of the San Bernardino office.

Finally, Ferguson said, "so that no one be confused, we won the competition with an outstanding technical proposal — outstanding. And my congratulations to all involved."

More photos of MX/AIRS proposal team, page 8.

Editor's note: Although it would be impossible to single out all the people who contributed, those pictured here had key roles in the proposal effort that played such an important role in winning the MX/AIRS award.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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FOILED AGAIN: Hydrofoil patrol craft High Point, turned over to the Coast Guard by the Navy for test and evaluation, skims under the Golden Gate Bridge en route to special mission off the Northern California Coast. Equipped with Northrop's Omega SRN-17 navigation equipment, the high performance watercraft has been used in typical Coast Guard missions as search and rescue, pollution control, and enforcement of laws and treaties. Warren Weimer, project engineer, Electronics Division, reports the navigation system 'worked very well' on a test, and that Omega appears suitable for such long-range missions as patrolling the pending 200-mile coastal waters limit.

Division Wins AWACS Production Contract

The Electronics Division has received a $4.7 million contract from The Boeing Aerospace Company to supply navigation equipment for six production versions of the Airborne Warning and Control System (AWACS) aircraft.

The Avionics Department will supply the integrated navigation systems with deliveries beginning in March 1976. Production work has begun at the Hawthorne facility.

AWACS combines the best of various sensors — inertial, Omega, and Doppler, says Don Avallon, "to optimize navigational accuracy and greatly enhance flexibility of systems. The contract establishes our position as a leader in precision hybrid navigation systems," he added.

The AWACS navigation system consists of a Northrop Omega radio navigation set (receiver/computer), a Delco inertial platform, and a Ryan Doppler velocity sensor.

Northrop, under contract to Boeing, prime contractor to the Air Force for the AWACS program, has responsibility for the integration, production and testing of all AWACS navigation and guidance equipment.

The Electronics Division has supplied two AWACS integrated navigation systems to Boeing for test purposes and is supplying three more systems for pre-production aircraft that will later be converted to operational use.

The modified Boeing 707 AWACS aircraft will be produced at the rate of one aircraft every two months at Boeing's Seattle, Wash., plant with first production aircraft scheduled to enter the Air Force operational inventory in November 1976.

AWACS is being developed by the Electronics Systems Div., Air Force Systems Command as an airborne surveillance, command and control center with ability to detect and track targets at any altitude and at long ranges over land or water.

The Army last month completed operational testing of AIDATS under simulated combat conditions at Ft. Huachuca, Ariz. For complete story on AIDATS field tests, see pages 4 and 5.

Senators Hear Jones, Millar On International Business

Thomas V. Jones, Northrop Chairman and President, and Richard W. Millar, Chairman of the Executive Committee of the Board of Directors, appeared before the United States Senate Subcommittee on Multinational Corporations early this month to discuss with the Subcommittee the complexities of international business.

During the two days of hearings, Mr. Jones and Mr. Millar testified on various aspects of the Company's international activities and provided details on the interim report prepared by the Executive Committee of the Board of Directors on the subject of the company's relationships with various consultants and sales agents in its overseas business.

"As members of the Foreign Relations Committee," Mr. Jones pointed out, "you are intimately aware that international relationships are complex and delicate, whether they involve matters of diplomacy or matters of business. The opportunities for error, or mistakes of judgment, or decisions which in hindsight may appear questionable, are many. The opportunities for success are fewer.

"Our record as a company has been in great part one of success, and has brought credit to American industry and to the United States."

Record of Reliability

Mr. Millar related to the Subcommittee that "Northrop's entry into the international marketplace is a relatively recent development over the last fifteen years or so. Our success in this area is due in great part to Northrop's policy of developing proprietary products that are particularly designed for the export market. We have matched this with scrupulous attention, in this country and among our overseas customers, to meeting all of our contracted commitments on performance, schedule and cost.

"I am sure I do not need to point out, to you gentlemen especially," Mr. Millar said to the members of the Senate Subcommittee, "that such a record of business reliability is rare, if not unique, in the defense industry. That rarity is unfortunate. But it is true."

Both Mr. Jones and Mr. Millar acknowledged that some mistakes have been made in the course of Northrop's expansion into international business and, in their testimony, both pledged that such mistakes "will not be repeated."

Problem Not Confined to Northrop

Senator Frank Church (D-Idaho), Chairman of the Senate Subcommittee stated: "I think in fairness to Northrop we must recognize that [the] particular problem we are inquiring into was not confined to Northrop alone and that, therefore, your case is to be regarded as a representative case of the problem that exists."

Mr. Jones said, in an opening statement, "As the Chief Executive Officer of the Northrop Corporation, I take full responsibility for all the actions of the Northrop Corporation. I regret and apologize for any embarrassment that has been caused to the United States and to those countries and individuals with whom we have had long and friendly relationships. The mistakes we made will not be repeated."

In their testimony, Mr. Jones and Mr. Millar discussed the tentative findings of the interim report prepared by the Executive Committee of the Board of Directors.

Interim Report Findings

"The Interim Report", Mr. Millar noted, "summarizes the results of our inquiry to date. I cannot emphasize too strongly that it is an interim report. Many matters are still under investigation.

"However, this interim report deals with the most significant elements of our investigation. While much work remains to be done before our completion date of July 20, 1975, we believe that the major problems have now been identified.

"There has been widespread published speculation regarding the questions raised by [our] Auditors concerning Northrop's international business activities," Mr. Millar told the Senators. "Much of that speculation has been erroneous. I hope that our Interim Report has helped put to rest some of that speculation. We hope this Subcommittee shares our view that *facts* — not surmise and speculation — are required to put these problems into a proper and reasoned perspective."

No '$30 Million' Fund

Mr. Millar told the Subcommittee that "Our Interim Report shows the following:

"Contrary to certain reports, Northrop has never maintained a $30 million 'slush fund'. We have never had evidence that any foreign consultants, other than Mr. (William) Savy, returned any money to the United States for political contributions or other unauthorized purposes. [Mr. Savy was a foreign consultant, no longer associated

(See SENATORS, page 7)

Jones Joins Leaders at Paris World Aerospace Conference

As a prelude to the Paris Air Show, top aerospace industry executives met at the World Aerospace Conference in Paris.

Speaking before the conference, Thomas V. Jones, Northrop president and chairman, said "in today's world, understanding the requirements of military customers involves more than just an understanding of his needs. It requires an understanding and appreciation of the environment within which the military planner must operate.

"Defense, like everything else today, is becoming more and more expensive. This applies particularly to research and development for military systems that will be needed 5, 10 or 20 years from now."

At Northrop, he said, "we long ago learned that if technology is to be focused on cost as well as performance, it must be done at the earliest stages of design.

"We in industry have the responsibility and the opportunity to organize the advanced technology and industrial resources we have at our command in the most effective and efficient way to meet our customers needs."

F-5E, F-5F Show Off at Show

Advanced technology hardware dominated the 31st Paris Airshow and among the U.S. inventory items on display were Northrop's "Pair of Tigers", the F-5E Tiger II International Fighter and its two-place, fully combat capable counterpart, the F-5F.

Hank Chouteau, Northrop's chief test pilot, put the F-5E through its paces during eight demonstration flights while Darrell Cornell, test pilot, conducted 16 sorties in the F-5F, many of which were customer demonstration flights.

"Both aircraft were outstanding in their performance and required minimum maintenance during the show," said Bob Cole, maintenance team leader for the show. "Due to the very limiting restrictions placed on participants in the aerial demonstrations, the aircraft had to be ready on a moment's notice as the flight schedules dictated.

"The nearest thing to a major maintenance problem was when an afterburner igniter was replaced on one of the F-5F's engines as a preventive maintenance precaution. The crew only required an hour and 20 minutes to pull the engine and complete the replacement."

Members of the ground support crews were: F-5E — Leonard Dean, crew chief; Jerry Compton, avionics technician; Dell Jump, airframe technician; Chuck Massey, airframe/logistics technician; and Loren Cole, quality control. F-5F — Jim Putney, crew chief; Rheinhold Kuhn, avionics technician; Curtis Snyder, airframe technician; Louis Chavez, engine/airframe technician, and Jay Aubry, quality control. General Electric representative Moose Ramos, provided technical support for all engine maintenance for both aircraft.

Air Force Awards MX/AIRS To Electronics Division Team

The Northrop division, on May 16, received a $32 million contract, with initial funding of $3 million, from the U.S. Air Force to design and develop the Advanced Inertial Reference Sphere (AIRS) for the Air Force's Advanced ICBM Technology Program (MX).

"I believe this contract is probably the finest win we could get at this period of time in the Electronics Division," said David N. Ferguson, corporate vice president and division general manager. "I also believe very strongly it was a team effort."

The Electronics Division's MX/AIRS Program organization was named late last month and work is underway on the key design and development program, George Fritzel, program manager, reports.

Under the three-year program, Northrop will produce four MX/AIRS inertial measurement units in evolutionary steps, in a program intended to demonstrate a suitable design for entering into a low-risk engineering program, said Dr. William Parker, manager, Strategic Missile and Space Systems Department.

For the past 10 years, the Electronics Division has been working in parallel with the Charles Stark Draper Laboratory, Cambridge, Mass., on development of advanced inertial measurement units, including the "floated ball" IMU produced for the Air Force's fleet of C-5 transports.

ON HAND TO extend 35th anniversary best wishes to Grant Gunderson, second from left, when he became the first Electro-Mechanical Division employee to reach this milestone with Northrop, are Tom Barry, left, vice president, Operations; James M. Ricketts, EMD general manager; and Dr. George Friedman, manager, Advanced Systems. Gunderson was with the Aircraft Division 13 years before transferring to Anaheim. Both Barry and Friedman also received 15-year service awards.

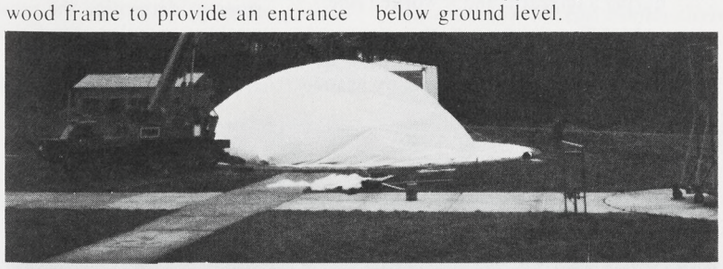
NSI Installs New Air-Supported Radome for NASA at Goddard

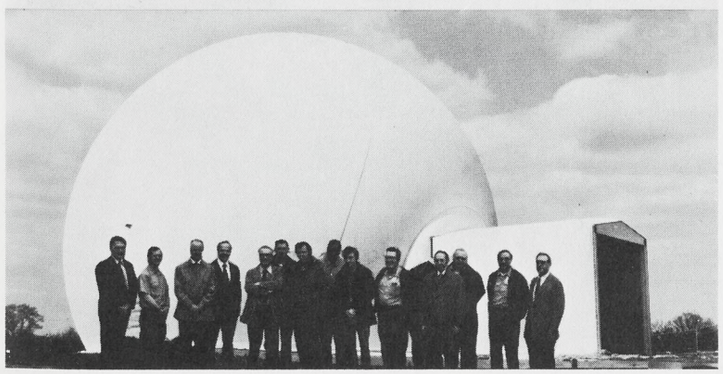
In fulfilling its support contract Northrop Services, Inc., handles many unusual jobs. Among the most recent was installation and erection of an air-supported radome and air lock at the Test and Evaluation Division, Goddard Space Flight Center, Greenbelt, Md.

The totally air-supported radome is made of a neophrene/nylon fabric. It is 66 feet in diameter at its widest point and stands approximately 50 feet high.

The air lock for the radome is a wood frame to provide an entrance and is covered with the same fabric as the dome. A unique feature of the air lock is that it has essentially no metal above the ground level. This is essential to keep from interfering with the radar inside the dome. Glued interlocking joints and wooden dowels were used.

After installation of the radome and air lock for the NASA unit at Greenbelt, NSI-Goddard personnel will be responsible for maintenance of the test facility, including blowers and other support systems located below ground level.





AN AIR-SUPPORTED radome and air lock, installed by NSI-Goddard rises in the photo above. In the lower photo, NSI people involved pose with the inflated test facility. They are, from left, Ronald Hand, Robert Shuford, Tom Grieger, Tom Amacher, Ron Sheffield, Don Rogers, Joel Wexler, Roland Hill, Don Benson, Ed Stoner, Walt Plesniak, Phil Yaffee, NASA, Bill Perry, Earl Martin, and Dwight Fortna, NASA.

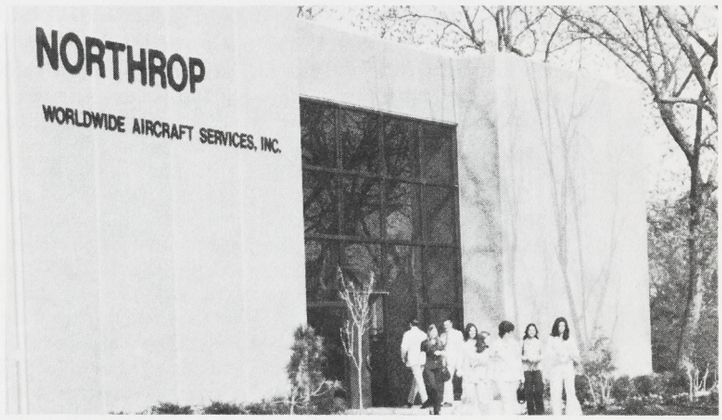
NWASI Moves to New Corporate Headquarters

Northrop Worldwide Aircraft Services, Inc., relocated its corporate and staff offices to new headquarters in Lawton, Okla.

The ribbon-cutting ceremony for Northrop Worldwide, which specializes in aircraft support services, was conducted by Rex H. Madeira, company president. Local dignitaries were in attendance at the ceremony which was followed by an Open House for visitors.

"These new corporate offices represent the continuing growth of the company as the leader in aircraft support business," said Madeira. "As our business activities expand in dollar volume and number of employees worldwide, all of us at Northrop Worldwide take pride in our accomplishments, and look forward to our future with confidence."

Madeira noted that "company sales are currently in excess of $40 million, an increase of 300 per cent over the last four years."



NEW HEADQUARTERS of Northrop Worldwide Aircraft Services, Inc.

Fox Accepts Award of Merit

Northrop Corporation's security program and Robert W. Fox, manager, Safety and Security, Aircraft Division, were named winners of the 1974 Award of Merit for excellence in the industrial category by Security World Publications, Inc.

Awards were presented to the company and Fox during the International Security Conference, May 13, in Chicago. Representing the corporation was John McNaughton, vice president, Finance, Defense Systems Department.

The 13-member awards committee cited Northrop's program as outstanding in industry internationally for its overall effectiveness in executive and employee protection, safeguarding of U.S. Government classified material, protection of proprietary information, fire prevention, plant protection and disaster protection.

RECEIVING AWARD OF MERIT on behalf of Northrop is John McNaughton, left, vice president, Finance, Defense Systems Department, and Robert W. Fox, manager, Safety and Security, Aircraft Division, right, who received a separate award in recognition of his efforts in establishing an international corporate security program. Don D. Darling, awards committee member, made the presentations.

AIDATS Proves Effective in Field Tests

DAY CHANGES to night quickly in the Arizona desert, and as the last reflected light faded from the Huachuca mountain range, stars flickered brightly and the air became cool.

Inside the dimly lighted ground control unit — hidden among a clump of trees — the Army officer and his crew studied the hard copy film that came out of the box-like device that is called a moving window display. The photo interpreter was making notations of targets shown on the film, while the officer observed, and from time to time talked into the mouthpiece attached to a radio headset he wore.

"It looks like unusual activity in sector H," he said. "We're getting good target identification. Let's take another look at that."

Scanning the Area

More than 70 miles away, Warrant Officer Roger Catlin sharply banked the twin-engine OV-1D Mohawk and began a 180 degree turn. He would fly back over the same path again.

The aircraft's side-looking radar (SLAR) would again scan the area of interest, and photographic-type imagery would be relayed instantly to the ground unit where the Army intelligence team could assess the information and apprise the commander.

Meantime, an "Aggressor" OV-1D, equipped with infrared and other sensors, dropped over the mountain range, and into the valley where the ground unit was camouflaged. Its lights off, it swept in low over the clump of trees hiding the unit, trying to identify the equipment, then executed a "Chandelle" climbing turn and disappeared.

What was happening to disturb the evening solitude of the Arizona desert was a U.S. Army exercise designed to test the operational use of a new reconnaissance data transmission system, developed for the Army by Northrop's Electronics Division. Called AIDATS (Army In-Flight Data Transmission System), this equipment was being tested in a simulated night combat exercise.

The mission was to spot and interpret any activity that might show an enemy buildup inside their territory, while the observation plane remained safely outside enemy borders. This was accomplished by the Mohawk's side-looking radar, which will pick up imagery at a substantial distance. The imagery is then digitally encoded and transmitted to the ground station, where it is received by a surface antenna, and then reconstructed by the Surface Recording Terminal (SRT).

"The advantage of Northrop's AIDATS data link system is that it allows transmission of reconnaissance imagery instantly — or in real time — and with a very high degree of resolution or accuracy," said Art Gandy, AIDATS program manager.

The advantage over conventional aerial reconnaissance is that the information is available instantly for a commander to assess. There is no wait for the aircraft to return to its base and for the film to be processed, before being reviewed by the commander.

The imagery provided by the AIDATS system has much greater resolution and detail than that provided by other transmission systems, says Gandy, and it is usable day or night, regardless of weather conditions.

AIDATS also has the capability of being used in containment of forest fires, and in disaster relief (hurricanes, floods, earthquakes) by providing an instant picture of conditions.

Testing at Night

The night test in May was part of an operational testing period during which AIDATS was put through its paces by personnel of the combat development portion of the Army Intelligence Center and School, Ft. Huachuca, Ariz., which evaluates operational effectiveness of new equipment designed to enter the Army's inventory.

"The Army really shook the system down," says Avionics Department's Gandy, who, along with Al Garreffa, Don Schultz, and Sam Lalande provided technical assistance to the Army when needed.

"They demonstrated they could haul it anywhere, set it up, and have it fully operational in nine minutes. After tests, it was dismantled, and ready to be moved in a little over 15 minutes," Gandy said. "Once we set it up during a blizzard, and it worked fine."

Mobility is one of the assets of AIDATS, says Gandy, as it is designed to be used by the Army at forward command areas, and can be quickly moved as military tactics require.

The nine weeks of operational testing at Ft. Huachuca were headed by Capt. Michael O'Byrne, an Army helicopter pilot and veteran of Viet Nam.

Captain O'Byrne and his group, headed up by Col. Sherwin Arcilis and Lt. Col. James W. Higdon work closely with the U.S. Army's Electronics Command (ECOM) at Fort Monmouth, N.J., which has responsibility for development, contractor testing and procurement of new electronics equipment for the Army. After ECOM has evaluated it from a technical standpoint, it is sent to Fort Huachuca to see how it performs under simulated combat conditions in the field.

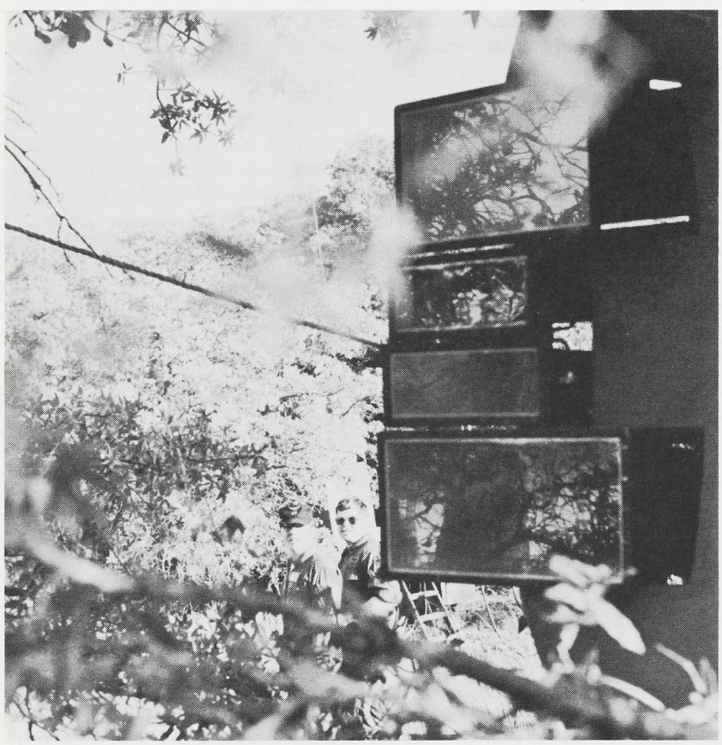
"Our job here is to make sure the Army gets the very best equipment it can to do the job. If it doesn't measure up, we don't buy it. This equipment works well and has the potential of working extremely well," says Captain O'Byrne, who is not prone to undue flattery.

Awaiting Decision

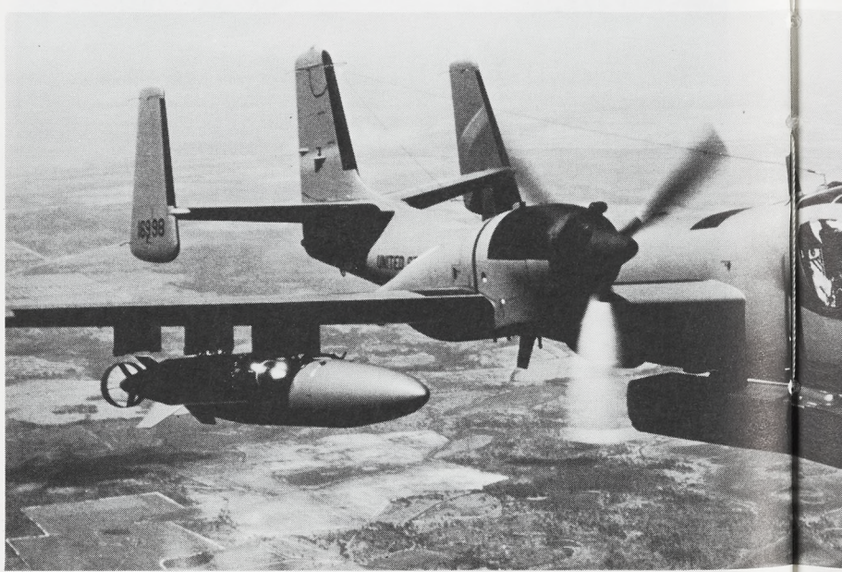
"I wouldn't feel bad about taking it to war right now," he said, adding that some modifications would undoubtedly be required before a decision on a production contract might be made.

O'Byrne said that not only was the equipment being evaluated in the tests on the Arizona desert, but the Army was using the simulated combat missions to determine the most effective working complement of skilled Army personnel.

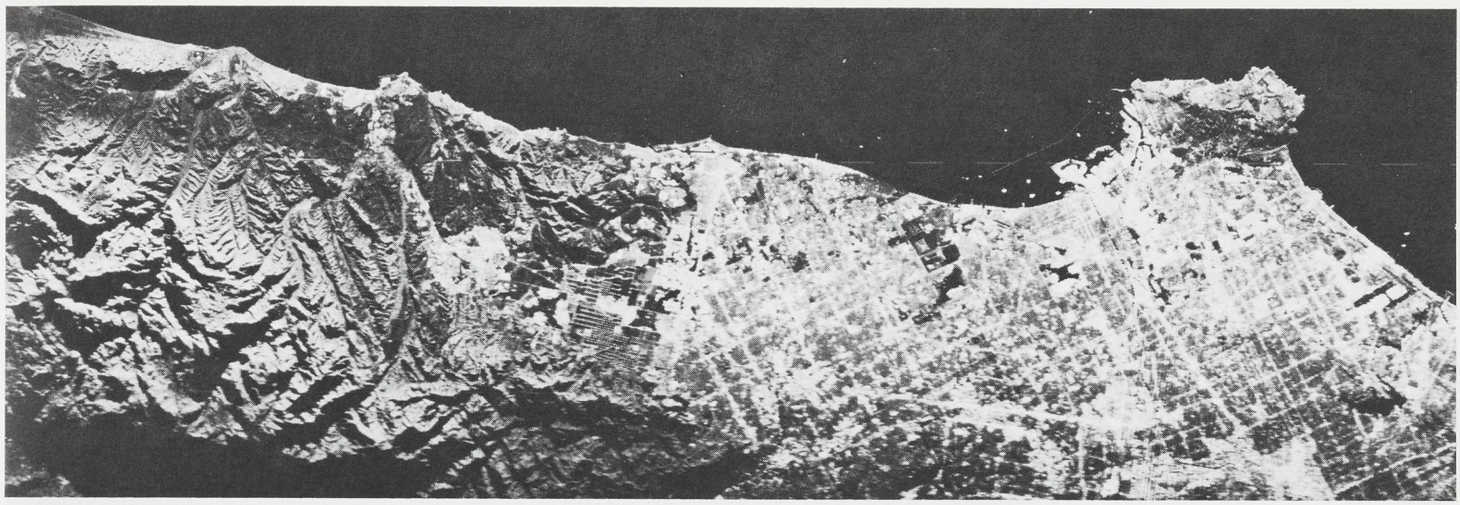
"We are also evaluating the true



INSPECTING EQUIPMENT, U.S. Army Captains Richard Wolfe and Michael O'Byrne, check positioning of camouflaged Surface Antenna Terminal (SAT) prior to simulated combat training exercise to test AIDATS system.



U.S. ARMY OV-1D Mohawk, equipped with Northrop data link system, transmits imagery from a side Army In-flight Data Transmission System (AIDATS). During recent tests at Ft. Huachuca, Ariz., Ar simulated battlefield exercises. AIDATS also has capability of being used in containment of forest fir



IMAGERY DISPLAYED AS hard copy film transmitted from Mohawk OV-1D shows Southern California coastline from Redondo Beach south to San Clemente. Taken from off shore, by side-looking radar, Northrop data link system transmitted imagery in near real-time with high degree of technical clarity during contractor demonstration.

it takes to get valid surveillance data to the commander, and with AIDATS, we were able to do this in a much shorter time than by other methods currently available," he said.

Prior to the operational testing at Ft. Huachuca, another section of Army personnel evaluated the system from a technical standpoint — during the development test phase, directed by Gene Whitby.

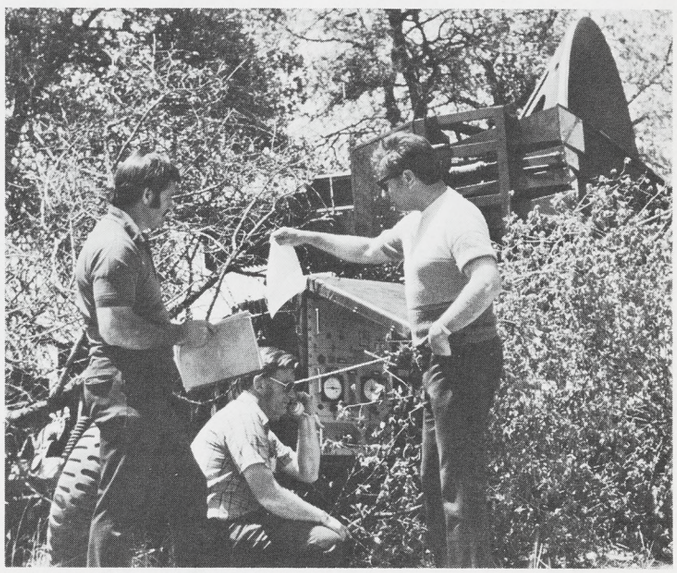
The Army testing followed a highly successful contractor demonstration of the AIDATS system held in mid-December on the Palos Verdes Peninsula.

During these tests, high resolution imagery of the California coastline, from Redondo Beach south to San Clemente, was demonstrated as a Mohawk flew off the coast at altitudes of up to 20,000 feet and as far away as 150 miles from the ground station.

With testing of the AIDATS system satisfactorily completed, A. B. Lipscomb, vice president and manager, Avionics Department, says he is awaiting completion of the Army's report and a subsequent decision.

Carl Bose, manager, Advanced Development, commented: "We are very proud of all those people involved in the test program which has been very successful. It has been conducted on time, within cost, and the system's performance exceeded all specifications."

Editor's Note: For those who have worked with and watched AIDATS in its development, from the time it evolved from the JIFDATS (Joint In-Flight Data Transmission System) two years ago, completion of these recent tests has marked a very significant and rewarding achievement. Further developments in this program — which promises to be one of the most important for the Electronics Division in the next five years — will be reported as they occur.

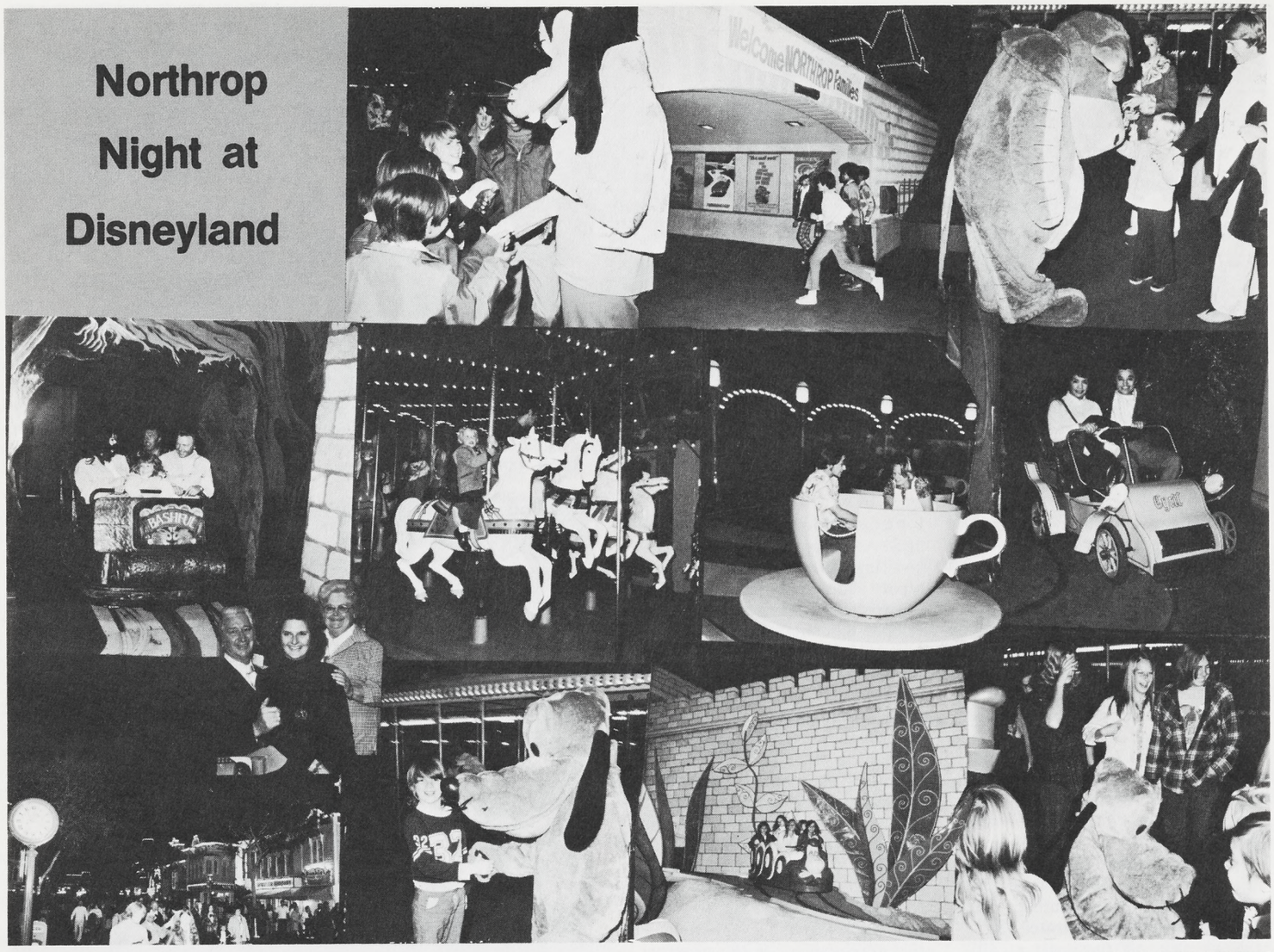


NORTHROP'S AIDATS team checks out equipment prior to Army operational testing of system. Left to right, Al Garreffa, Chuck Fuller and Art Gandy, program manager, monitor tracking of SAT partially camouflaged in background.

ery from a side-looking radar (SLAR) during test flight of huca, Ariz., Army tested system during day and nighttime nt of forest fires and in disaster relief.

CAPTAIN MICHAEL O'BYRNE, right, operational test officer, U.S. Army Intelligence Center and School, discusses upcoming night reconnaissance mission with OV-1D Mohawk pilot, Warrant Officer Roger Catlin, outside mobile shelter housing Surface Recording Terminal (SRT). Unit is mounted on Army truck for mobility as military tactics require.

Northrop Night at Disneyland



Recreation Notes

A meeting to discuss the 1975 Caribbean Cruise will be held Thursday, June 26 at the Alondra Club Restaurant, 7:30 p.m., according to Dave Carney, Aircraft Division NRC Travel Club commissioner. There will be general and specific informational discussions, a movie and door prizes. Reservations for dinner may be made by calling the Alondra Club, 371-1546.

The tour is open to all Northrop employees, families and guests. The Miami golf tour costs from $799; the New Orleans tour from $689 for 12 days. Departure date is Oct. 10. Brochures on both tours are available at Personnel Activities.

* * *

Two family fun weekends have been set aside for Northrop families at Marineland with special discount prices offered. Any time between June 28 and July 5, employees pay $3 for adults, $2 for juniors and $1, children.

Employees can enjoy Marineland's cast of star performers: Bubbles the Pilot Whale, Orky the Killer Whale, Flipper and his dolphin friends, and many other types of aquatic animals from sharks to octopuses. Tickets are available from Aircraft Division Personnel Activities, ext. 3575.

* * *

The NRC Trap and Skeet Club has four shoots remaining on the 1975 schedule and all employees are invited to come out and participate or else just watch this exciting sport. All shoots begin at 9 a.m. on Sundays.

On June 29, Winchester West Shooting Range, Carson; July 13, International Trap and Skeet Range, El Monte; July 27, Winchester West; and Aug. 10 — International.

* * *

A firecracker race for radio-controlled airplanes will be held by the Electro-Mechanical Division Model Aircraft Club at the Anaheim Flying Field. All Northrop employees are invited to participate or just attend on July 6. Call Anaheim ext. 244 for details.

ED PETERS, left, and Julian Bloom, prepare for the big firecracker race July 6.

* * *

An Aruba Holiday is scheduled for Nov. 1-7 at the Holiday Inn/Aruba, one of the finest resort hotels in the Caribbean. Price per person, double occupancy, is $400, $500 single room and includes chartered American Airlines 707, three meals per day, and a luxurious suite. Deadline for deposits of $100 per person is July 15, with final payment due Sept. 5 made payable to Northrop Recreation Club. Mail to Jeannie Zubak, Electronics Division travel commissioner, A2253/A60.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

LeMans, 1966, all power, air, $300. 213-679-8397, 213-675-8822.

Motorcycle, 1972 Yamaha 250 DS7, street, extras, $500. 213-374-6401.

Gremlin, 1972, 41,000 mi., $1895. 213-329-9809.

Motorcycle, 1966 Triumph Bonneville, 650cc w/750cc kit, set up for dirt, $450. 714-737-2742.

Plymouth, 1966 Valiant, reblt. eng., 10,000 mi., $550. 213-865-5615.

Ranchero, 1964, '70 Mustang 6-cyl. eng., AM/FM stereo radio, auto. trans., many extras, $1250. 714-995-4053.

Cougar, 1971, a/c, p/s, $2295. 213-328-3306.

Nova, 1969, air, AM/FM, 8-track, $1300. 213-542-6844.

Volkswagen, 1971 Super, new heads, clutch, brakes, batt., AM/FM, 8-track, $1500. 213-675-3109.

Mazda RX4, 1974, AM/FM stereo, 2600 mi., $3450. 213-379-7354.

Chevrolet, 1974 van 20, V-8, auto. trans., p/s, p/b, $4250. 213-541-1913.

Corvette, 1972 LT-1, hi-perform., p/s, p/w, radials, mags, AM/FM stereo, $5995. 213-782-1909.

Chevrolet, 1971, 350 V-8 Camaro, all power, a/c, $2400. 213-532-4122.

Pickup, 1964 Chev., ¾-ton, W/10½' El Dorado camper, jacks, $2295. 213-676-5039.

Plymouth, 1966, 4-dr., V-8, $600. 213-320-4243.

Opel, 1974 Manta Luxus, AM/FM stereo, 4-spd., 8000 mi., $2900. 213-973-2516, 213-679-3275.

Pinto, 1971 sports coupe, standard, new mag tires & whls., 40,000 orig. mi., $1495. 213-675-5675.

Ford, 1967 Fairlane 500 convt., 390 eng., needs top, $500. 213-889-4543.

Motorcycle, Harley Davidson Sportster, 4500 mi., new twisted springer front end, $2250. 213-547-0257.

Ford, 1971 LTD Brghm., air, all power, $1500. 213-867-1807.

Motorcycle, Kawasaki KX 125, 3 mos. old, Boge forward mounted shocks, never raced, $750. 213-324-5449.

Triumph, 1971 TR6, sport convt., new tires, $2400. 213-326-8165.

Motorcycle, 1967 Yamaha 305, street, $200. 213-771-0173.

Motorcycle, 1970 Harley Davidson Sportster, $1800. 213-323-0329.

Ford, 1969 Bronco, 4 w.d., V-8, elect. winch, roof rack, $2800. 213-665-9643.

Corvair Dune Buggy, roll bars, sand tires, trailer, $450. 213-884-4679.

Toyota, 1973 Corona, auto., air, AM/FM, 36,000 mi., $2600. 213-375-8643.

Motorcycle, 1972 Honda CL350, 13,600 mi., eng. rebit. at 13,000 mi., $500. 213-677-8868.

Chrysler, 1969 Town & Country sta. wagon, 4-dr., 6-pass., r/h, a/c, p/s, auto. trans., V-8 eng., $800. 213-325-3404.

Jaguar, 1959 XK 150, 327 Chev. rebit., 1000 mi., 4-spd., chrome wire whls., $1500. 213-598-8894.

Ford, 1969 Supervan, camper conversion, extra gas tank, $2800. 213-679-6672.

Jaguar, 1954 XK-120M roadster, new clutch, wire whls., needs restoration, $1500. 213-379-4635.

Miscellaneous For Sale

Luggage, 4-pc. Samsonite, beige, $50. 213-679-8397, 213-675-8822.

Sailboat, 26' Seabird, 8 h.p. diesel inbd., RDF, many extras, $4200; chord organ, Sears C&G, 4-rhythm tempo, $95. 213-320-8297.

Storage Drums, 55-gal., fibre, metal lids, $6 ea. 213-323-7872, 213-547-4670.

Dishwasher, portable, white, 3-cycle, 15 mos. old. Wards Signature, $125. 213-530-1874.

Cemetery Plots, 2 internment, in Forest Lawn-Hollywood Hills, $1100. 213-340-5960.

Miscellaneous For Sale

Doghouse, lge., $10. 213-370-5031.

Target Pistol, Smith & Wesson, mod. 41, h. barrel, 22 cal., 2 clips, $125; drafting machine, Bruning Detailer, $50. 213-675-5258.

Wheels, 4 15", steel, w/hub caps for 912 Porsche, $20; tubes, 2 radial, $5; sleeping bag, down, $35. 213-532-3622.

Tumbler, lge. elec. motor w/reducer for polishing, $25. 714-968-7987.

Refrigerator, Westinghouse, auto. defroster w/freezer compartment, $35. 213-322-9206.

Water Heater, 40-gal., elec. 2½ yrs. old, $45. 213-540-2227.

Bunk Bed, 1 yr. old, dk. walnut finish, will deliver, $90. 714-995-3436.

VTVM, Eico mod. 249, $25; multimeter, B&K mod. 290 FET, $75. 213-324-7097.

Shotgun, Remington 870, 12 ga. full choke, 30" ribbed bbl., $125. 213-532-7846.

Pool Pumps & motors, 2 2 h.p. & 1 1 h.p., $100 ea. 714-995-4053.

R.C. Package, Kraft Sport 5, V.K. Cherokee, OS 30 plus muffler, ready to fly, $275. 213-377-2543.

Tires, 4 1:55 x 13, wheels & hub caps, 7000 mi., from 1974 Toyota, $50. 213-375-8536.

Movie Camera, Minolta autopak-8 K7, w/Rokkor 1:18/9.5-38, auto. zoom lens, leather carrying case, projector, Elmo 8 mm dual, F1.3 20 mm - 32 mm zoom lens, never used, $250. 213-379-3313.

Trumpet, Conn Professional, $140. 213-341-0759.

Tent Trailer, Bethany, sleeps 6, gas stove & htr., $900. 213-531-3872.

Desk, dble. pedestal, steel, gray, $45. 213-346-3751.

Tank & cart, Evinrude, 9.5 h.p., $275. 714-846-9644.

Bedroom Furniture, girl's, modern design, $95. 213-377-9666.

Stove, O'Keefe & Merritt, white, $50. 213-542-0045.

Pups, miniature pinscher, AKC, male, $150; female, $100. 213-324-9732.

Stereo, Magnavox components in 8' Oriental modern cabinet, recently refurbished, $250. 213-378-6482.

Engine, 1600 cc, & trans. from 1969 VW bus, $350. 213-545-5960.

Broiler w/rotisserie, Farberware Open-Hearth, elec., complete, $30. 213-675-1000.

Pups, lhasa apso, female, $200. 213-541-2860.

Dog, Irish setter, female, 2 yrs. old, AKC, $50. 213-327-0378.

Stereo, Mediterranean, walnut, 6' cabinet w/wet bar, $75. 213-370-9398.

Dining Room Table, drop leaf style, 38" w., extends to 80" long, $85. 213-545-1631.

Patio Furniture, complete set, TV game show prize, $900. 213-833-6057.

Drum Set, 7-pc., deluxe, many extras, $225. 213-371-5308.

Pup, silky terrier, male, AKC, shots, $200. 213-329-7994.

Organ, Hammond mod. L-102 spinet, 2 full manual & pedal keyboards, $650. 714-595-3013, 714-529-1672.

Refrigerator, Frigidaire, bronze, 17 c.f., $200. 213-973-0956.

Scuba Equipment, U.S. Divers tank, J valve, $55; regulator, Deep Star, $40; vest, Voit, $20. 213-530-0501.

Hospital Bed, 3 controls, $125. 714-879-1325.

Pups, keeshond, AKC reg., 15 wks. old, $125. 714-635-2539.

Bottle Collection, Avon, $50. 213-679-6672.

Digital Clock Radio, Panasonic AM, white case, $25. 213-347-0298.

Touring Bicycle, 5-spd., men's, carrying rack, 15 act. mi., $65. 714-897-5134.

Movie Camera, Bell & Howell, 8mm, zoom lens, elec. light, $85. 213-532-4984.

Refrigerator, Gibson, white, needs work, $10. 213-677-7421.

Dining Room Set, Drexel Pavilion 5-pc., walnut, $150. 213-395-4801.

Bar, 6', rattan, 4 stools, $125. 213-377-4569.

Drafting Machine, Bruning w/scales, $55. 213-869-7564.

Pool Table, bumper-type, 2 cue sticks, balls & rack, $45. 213-675-1464.

Tub Enclosure, 5', sliding door, safety wire glass w/sandblasted swan design, complete, $25. 213-644-3742.

SENATORS — Hear Executives

(Continued from page 2)

with the company, who returned a portion of his funds, which were subsequently used for political contributions.] He returned approximately $476,000.

"Similarly, there is no evidence of substantial inaccuracies or inadequacies in Northrop's financial records. We are investigating relationships and transactions pursuant to which as much as $30 million may have been paid or committed. We have found that nearly all of these amounts were disbursed pursuant to agreements with consultants and commission agents that were duly entered in Northrop's records.

"Finally, there is no substance to reports that we are studying a problem of $30 million in unlawful or improper expenditures. The Directors have identified serious issues concerning the corporate procedures whereby consultant/agent relationships are approved, and some instances of questionable business judgment as to the scope of such relationships.

Three or Four Exceptions

"With three, and possibly four, exceptions, however, we have uncovered no evidence that unlawful payments to officials of foreign governments were made by Northrop directly or through intermediaries."

The Interim Report of the six-month investigation stated:

"The investigation has uncovered only one instance in which Northrop employees may have made an unlawful payment to a government official and that involved a payment of $4,400 demanded by a tax assessor in Iran to settle a tax liability.

"In two instances, Northrop made payments in a total amount of $450,000 to its agent in Saudi Arabia on the representation that these funds were demanded by two Saudi Generals.

"One other possible instance of an unlawful payment in another country remains unconfirmed. It involves an allegation of a $15,000 payment to a local politician and is the subject of further investigation."

Northrop Not Isolated, Says Percy

Senator Charles H. Percy (R-Illinois) commented during the hearings that "It can be argued that Northrop is a special case but all evidence leads to the belief that they were involved in what would be called accepted practice in the trade . . . Northrop is a case study but I am afraid not an isolated case, and should not be looked upon as such."

Mr. Jones pledged to the Senators that "I personally will vigorously implement and carry out such policies and recommendations as may be adopted by our Board of Directors as a result of the Executive Committee's final report. Further, I similarly pledge to support in every way that I can new regulations or perhaps new legislation that may be enacted as a consequence of these hearings. I make this commitment because of my belief that Northrop's conduct of its international business will reflect the highest credit to our shareholders, the concerned branches and agencies of the United States Government and our foreign customers and other foreign business associates.

Performance is Fundamental

"I am proud to state that the Northrop Corporation has earned a reputation and recognition among its customers in this country and the world as a corporation that meets its responsibilities," Mr. Jones told the Subcommittee. "We have a record of building and delivering our products on time and within our contracted costs and meeting or exceeding all our performance guarantees. This corporate performance is of great importance to our customers, and is a fundamental reason for the continuing growth of our company. This is a record of which our employees, our shareholders and our country can justifiably be proud.

"I believe that is the fundamental strength of our company, and that it will enable us to correct our past errors in a positive and constructive fashion."

(Copies of Mr. Jones' and Mr. Millar's statements may be obtained by contacting the Employee Communications office at the Aircraft Division, (213) 970-2313, or write to: Employee Communications, Northrop Corp., 3901 W. Broadway, Hawthorne, CA 90250.)

Miscellaneous For Sale

Dune Buggy Equipment, 1958 VW pan w/transaxle & front axle, steering column, gas tank, $50; window frame, rear, for 1932 Ford coupe, $10. 213-379-0784.

Receiver, Heath all-band, 200 KHZ-30 MHZ. ANL, BFO, all transistor, 3-way pwr., $175. 714-530-7128.

Air Conditioner, window-type, Duracrest, 10,000 b.t.u., $50. 714-821-9144.

Aquarium, salt water, 50-gal. tank, access., $125. 213-476-3218.

Washer, Frigidaire, white, lge. cap., deluxe model; dryer, gas, Frigidaire, white, $150 ea. or $275 set. 213-325-3404.

Mag Wheels, 2 sets, 4 slotted alum., 4 spoked alum., all w/tires for Chev., $80 set. 213-645-0526.

Awning, for travel trailer, 8'x14', used once, $75; hammocks, 3, fully rigged, $45. 213-645-7931.

Wanted To Buy

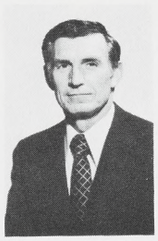
Boy Scout Uniforms, used & back-packing equipment, donations for needy boys. 213-832-3429.

Freezer, upright in good condition. 213-377-5003.

Stereo Receiver or amplifier, 20 w. per channel minimum. 213-372-5508.

Key People On MX/AIRS Proposal Team

Larry Beuder


Norm Henry

Bob Froeschle

Bill Hale

Joe Radigan

Jim Rowley

Les Grohe

Jack Bouchard

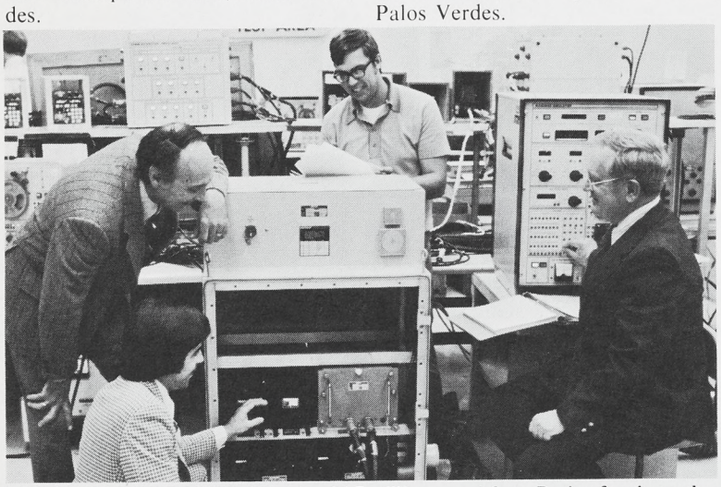
Service Awards Presented

Five employees are observing 25th anniversaries with Northrop during June to highlight the list of service awards for the month. Joseph T. Guston, Palos Verdes; and Dan L. Dennis, Wm. H. McDonald, Marvin G. Cornford, James E. Schuler and Emma L. Petri, Hawthorne, topped the list.

Others observing June service awards are: 20 years — Betty Stoltz, and Leroy Downing, Hawthorne; and Ronald Sutton, Robert James and Rudolph Modster, Palos Verdes.

Robert P. Salisbury on special assignment to Wilcox Electric, Inc., observed his 25th anniversary May 22 to head the list of service awards for that month.

Others observing service awards were: 20 years — Merle H. Holeton, and Robert H. Horton, Hawthorne; 15 years — Yoshiaki Fujimoto, William L. Vedera and Charles Lotterman, Hawthorne; 10 years — Richard O. Arnold, Gladis I. Nickelson and Stephen Zurnaciyan, Hawthorne, and Byron Arehart, Palos Verdes.


TESTING AWACS UNIT, following $4.7 million award from Boeing for six production integrated navigation systems, are, clockwise from left, Bob Boze, project engineer; Vic Moore, project manager; Norbert Nastanski, test engineer; and Dan Scheer, quality assurance engineer. First production unit assembly starts this month.

LOTS OF LEMONADE: Davor Bozin, senior engineer, Palos Verdes, shows off giant lemons grown on tree at his home in San Pedro. Some lemons, which grow in a curved shape, have reached eight inches in length. Bozin, who came to this country from Rava, Yugoslavia, has made a hobby grafting citrus trees to produce unusual shaped fruit.

DICK BAGGETT SOARS ON CYCLE

'Clutch Bunch' Hits Full Stride

One NRC activity just hitting full stride this summer is the Dirt Bike Club, better known as the "Clutch Bunch."

"We started out this year by sending out a flyer to see who would be interested in joining a family-type bike club," says Ray Smith, general supervisor, Photo, Repro and Tech. Data Branch, club president. "We started with 18 people, and now it's up to 27 Northrop families."

Purpose of the club is to get into the outdoors and enjoy cycling, Smith says. An outing is scheduled one weekend a month, and includes cycling competition and camping out, with everyone joining around the campfire.

"The competition is for fun. We don't have all-out races as we don't want anyone to get hurt," Smith says.

However, he adds, in November, the Clutch Bunch is joining the big Barstow to Las Vegas American Motorcycle Assn.-sanctioned race, a grueling cross-country ride of 183 miles, lasting 8 to 10 hours.

Students Benefit From Fellowship Plan

Three college students are working for the Electronics Division this summer as part of Northrop's Business Management Fellowship Program which helps them obtain a college education while obtaining professional work experience.

Trinita Alexander, 19, a sophomore at USC, is working her second session in the Employment Section at the Hawthorne facility. Trinita is majoring in public administration, and says she'd like to work full-time for Northrop following graduation.

Another student is Michael Harris, also in his second year of the program, who is employed in Production Test at Hawthorne.

A third student in the program, to be employed at Palos Verdes this summer is Erin Sims, who has been accepted as a freshman at UCLA, and will work in Accounting. This is her first year in the program.

TRINITA ALEXANDER

Three Employees Credited With Life-Saving

The skill and timely action of three Electronics Division personnel at Palos Verdes and Northrop's first aid training are credited with saving the life of a fellow employee, victim of a heart attack, recently.

BILL AND WIFE BEA JACKSON

W. A. "Bill" Jackson, machinist and a 22-year veteran of the company, summed it up when he wrote the following message to the Northrop News:

"Northrop first aid training was the major factor in saving my life on May 28, 1975. My heart stopped while I was at work at the Electronics Division, and it was the knowledge and skill of Northrop trained men which kept me alive until paramedics arrived.

"One doesn't always appreciate the real value of the Northrop Safety Policy until there is an emergency in one's own life."

The employees who helped Jackson were Dick Paramore, his foreman in the Building 4 machine shop; John Nygard, refrigeration mechanic; and Joe Rahiya. Paramore is chairman of the Workman's Safety Committee at Palos Verdes, Nygard is a committee member, and Rahiya is Safety and Plant Protection representative, who instructs in how to save lives. (See committee photo, page 10.)

Responded Instantly

"The call came in on the emergency line, ext. 221, at Palos Verdes, at 7:23 a.m. on the morning of the 28th," Rahiya recalls. "We responded instantly, providing heart massage and mouth-to-mouth resuscitation until the paramedics from the Peninsula Center arrived. The paramedics said nothing could have been done if we hadn't administered the aid."

Rahiya had selected the group to be trained at Palos Verdes and conducted the training. Paramore was first to reach the victim, and began resuscitation efforts until being relieved by Nygard and Rahiya.

Back to Work Soon

Jackson was rushed to Little Company of Mary's Hospital, Torrance, where he was treated and a pacemaker installed. He was home recuperating, and planned to be back to work soon.

Note: In a continuing effort to train employees in this vital life-saving program, courses were held for selected personnel at Palos Verdes on July 15 and at the Hawthorne facility July 17, Rahiya said.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California **Vol. 33, No. 7** **July 1975**

German Engineers Learn Division Technology During U.S. Assignment

For Ronald Denda and Hans Zuckschwerdt, coming to the U.S. from their West German home of Koblenz last April and working full-time for Northrop has been a constant learning experience, and a rewarding one.

The two engineers are employed by the Federal Office for Military Technology and Procurement, West German Ministry of Defense. They are participating in an exchange program set up in 1963 between the U.S. and West Germany to improve communications between the two defense establishments, said H. L. Janssen, manager, Division Relations and Services.

The pair is assigned to the Electronics Division for a full year, on the regular payroll of their West German employer. They will learn as much as they can about U.S. engineering and technology, and take this knowledge back home to improve operations in their areas. Ronald and Hans are currently assigned to the Digital Electronics Development Group, headed by Bill Lockie.

VALIDATING ENGINEERING drawings, West German engineers Ronald Denda, left, and Hans Zuckschwerdt, center, check printed circuit card pen plots against schematic drawings while Bill Flood, supervisor, Digital Electronics and Memory Development Unit, looks on. (Photo by John Lewis.)

"They are doing useful development engineering work," said Lockie. "We aren't just giving them busy work. We want them to go back to their country and say 'this is how they (the Americans) develop their technology, and this is how their engineering is generated.'

Assignments

"We want them to be part of our organization," Lockie said. "We give them assignments they are responsible for. They are good engineers and seem to fit right in."

In their current jobs, they are testing components and checking engineering drawings in the development phase of a new high-speed core memory system for the next generation Electronics Division airborne digital computer.

"We want them to become familiar with our procedures for arriving at new designs," said Bill Flood, supervisor. "In their jobs in Germany, they procure hardware similar to that they are evaluating here. This should help them."

(See ENGINEERS, page 10)

Dr. W.L. Parker Appointed New Vice President

Dr. William L. "Bill" Parker, head of the Strategic Missile and Space Systems (SMSS) Department, has been appointed vice president and assistant to the division general manager for Strategic Systems.

In his new post, Dr. Parker will be responsible for strategy, resources and business planning for all strategic systems activity within the division. He will also identify, assign and monitor IR&D programs as they relate to strategic systems.

Dr. Parker

"Dr. Parker has played a key role in the team efforts which recently won the MX/AIRS and the ACT I computer development programs for the division," said David N. Ferguson, corporate vice president and division general manager. "Based upon his accomplishments to date, I am confident Dr. Parker will lead the division in the successful pursuit of additional business opportunities."

A 21-year veteran of Northrop, Dr. Parker earned his Ph.D. in mathematics from the University of California at Berkeley.

During World War II, from 1943-45, he was a pilot in the United States Army Air Force, flying the B-26 Marauder.

★ News Briefs ★

AID CONTRIBUTIONS UP

Northrop employees pledged $280,000 during the 20th AID-United Givers campaign for the support of national health organizations and local health, youth and welfare services of United Way agencies.

The 1974-75 contributions upped the total giving in the two decades over the $5 million mark.

Contributions increased this year by $10,000 when the drive ended with 1420 more employees giving through AID and 1335 of that number pledging their charitable support at the AID standard of 50 cents for every $100 earned.

NORTHROP SPONSORS YOUTH AWARD

Schools, colleges, universities, youth organizations and civic groups are urged to nominate qualified young people for the new annual Kitty Hawk Youth Award sponsored by Northrop as a means of encouraging youthful interest in aviation and aerospace.

Nomination blanks may be obtained from the Wright Brothers Banquet Committee, Los Angeles Area Chamber of Commerce, 404 S. Bixel St., Los Angeles, CA 90017. Nominations must reach the committee by July 31.

The new award will be presented for the first time at the Los Angeles Area Chamber of Commerce 1975 Wright Brothers banquet in December. Winner will receive a trophy and $1000 cash.

F-5F IN TUNISIA AND MOROCCO

Northrop's new F-5F fighter/trainer was flight demonstrated in Tunisia and Morocco at the request of the two governments following its successful aerial demonstrations at the 31st Paris Air Show. Hank Chouteau and Darrell Cornell, Northrop test pilots, flew the demonstration flights.

NSI AIDS APOLLO/SOYUZ

Five Northrop Services, Inc., microbiologists from the Life Sciences Laboratory, Johnson Space Center, Houston, Tex., are participating in Russia in joint preparations for the Apollo/Soyuz Test Program.

The experiments involve microbes and fungi cultures to be flown in each spacecraft and exchanged in space. This will provide data on the effect of high-energy radiation during space flight.

SUCCESSFUL MISSION OF MQM-74C

A successful mission marked the first Pacific Fleet operational use of the Ventura Division MQM-74C target aircraft on San Clemente Island, June 12.

Ventura Division is currently producing the MQM-74C under a $9.1 million multi-year contract. The MQM-74C is a remotely controlled target aircraft designed to simulate the attack and evasive maneuvers employed by modern fighter-bombers. It can fly to speeds of 576 miles an hour at altitudes of 40,000 feet.

F-5E IN CHINESE AIR FORCE INVENTORY

The F-5E is now in the inventory of the Chinese Air Force of the Republic of China. The F-5E is being produced by Taiwan under co-production agreement with Northrop.

PPD RECEIVES TWO CONTRACTS

Precision Products Department (PPD) has been awarded a contract to test and evaluate its own NIS-210-24 strapdown inertial system for feasibility and performance potential by the USAF. Another contract has been awarded PPD to supply GR-G5 rate gyros for the flight control system of the Fairchild A-10 Close Support aircraft.

UNIVERSITY TO HOUSE AMERICAN HALL

Plans were recently announced for the development of the American Hall of Aviation History, adjacent to the Northrop University campus, by Northrop University president, Dr. B. J. Shell.

Scheduled for completion in January 1976, to coincide with the U.S. Bicentennial year, the American Hall will be housed in a 31-room building across the street from the university's main campus in Inglewood.

First Flight of Boeing's 747SP

THE FIRST 747SP (Special Performance) airliner in distinctive red, white and blue markings is shown on its initial flight July 4. The flight of the 'Junior Jumbo,' 47 feet shorter than the standard 747, lasted 3 hours, 4 minutes. Northrop produces the main fuselage sections at the Aircraft Division; wing-to-body fairings at Ventura Division; stringers and floor beams, Electro-Mechanical Division; and support posts, stringer clips and floor panels at Northrop Pacific in Long Beach. (Boeing photo.)

TOUGH AND READY is Chukar target aircraft 003 as Northrop Ventura technicians Ziotis Davilas, left, and Bob Foster get target ready for another flight at the NATO Missile Firing Installation (NAMFI) on the Greek island of Crete. Chukar 003 has flown 45 missions in the more than four years it has been in service. NAMFI is operated for NATO by the Ventura Division. Ventura Division recently received an 18-month $3.1 million extension to the current aerial target services contract.

Employees Around Northrop Make News

Northrop Newsmakers

CLIFF GRIMSLEY, Aircraft Division Planning Operations, right, receives his certificate as a certified professional contracts manager sponsored by the National Contract Management Association from W. H. Ruddy, manager, Master Planning.

• **A number** of employees from the Aircraft Division are scheduled to present papers and/or participate in the AIAA 1975 Aircraft Systems and Technology Meeting, Aug. 4-6 at the International Hotel, Los Angeles.

Personnel and titles of papers are: **Aaron Feder,** "Test Results of Computer Graphics Productivity for Aircraft Design and Fabrication"; **Douglas Linder,** "Ground Testing and Simulation"; **Roy Merriman and J. T. Gallagher,** "Simulation and Ground Testing of the YF-17 Flight Control System"; **S. R. Murnane,** "F-5E Aircraft Structural Integrity Program"; **Joe Noyes,** "Designing with Composites"; **Robert Bratt,** "Aerodynamic Design"; **Dr. George Mills,** "Composite Design II"; **Ralph Verette,** "Temperature/Humidity Effects on the Strength of Graphite/Epoxy Laminates"; and **Haig Asdurian,** "YF-17 Propulsion System Development."

• **Robert G. Morris,** Aircraft Division Mail Services, has been elected to the executive committee of the 902 Postal Customers Council at the U.S. Postal Service's Sectional Center in Inglewood.

• **Ventura's Chuck Simmers, Tom Lucero** and recent retiree **John Lawrence** were members of the Reseda Valleyaires Barbershop Chorus which placed fourth overall in the Southern California preliminary competitions recently.

The Conejo Valley Harmony Oaks chorus placed sixth overall and first in the Small Chorus division. Ventura Division members are **Irv Irvine, Joel Murphy, Dave Coe and John Gurule.**

• **Richard Schneidmiller,** Northrop Research and Technology Center, was program chairman for the physical sciences sessions of the 7th Joint Meeting of the Northern and Southern California Societies for Electron Microscopy in San Diego. Other employees who presented papers were **Robert Herfert and Thomas Remmel,** Materials Research Group, Aircraft Division.

• **Betty Duba,** Electro-Mechanical Division value engineer, attended the National Seminar on Value Engineering in Baltimore, Md. The seminar was sponsored by the Society of American Value Engineers (SAVE).

• **Nisar Ciddiqi,** inventory control analyst, and **Jose Velasco,** logistics analyst, Aircraft Division, received master of science degrees in operations management from Northrop University last month.

• **The board of directors** of the Northrop Credit Union at Hawthorne, presented a newly established special award to **George Douglas,** former senior vice president and **George Gore,** former general counsel. Both officers of Northrop recently retired. The Credit Union will present this award to honor employees and officers of their sponsor, Northrop Corporation, who have given outstanding assistance to the Credit Union.

• **James A. Ripley,** purchasing agent, Specification Control Procurement, Electro-Mechanical Division, received his master's degree in management sciences from West Coast University. He attended school under the Northrop Educational Refund Program.

• **Susan Epperson,** statistical clerk, Aircraft Division, won $3600 in prizes on the Wheel of Fortune game show, June 1, on Channel 4, KNBC-TV.

• **Peter Heiman,** configuration management systems specialist, Aircraft Division, was installed as secretary of the Inglewood Chapter of the Association for Systems Management (ASM).

• **George L. Matuskey,** Unemployment Insurance Claims, Aircraft Division, was installed as president of the California Unemployment Insurance Council at the Marriott Hotel. Featured speaker for the evening was **Ed Furtado,** corporate employee counselor. Furtado spoke about the Northrop Employee Counseling Program.

• **Duane Hall,** associate project administrator at the Ventura Division, has been elected to the Ventura County Board of Education. He represents Newbury Park, Thousand Oaks and Camarillo.

• **Representing** the Ventura Division at the annual symposium of the National Association for Remotely Piloted Vehicles, Wright-Patterson AFB, Ohio, were **Vice President Dr. V. W. Howard, O. L. Caperton, D.K. Welch and H.F. Smith** of Engineering and **Manager Hal Ort and Rick Hilton,** Aeronautical Tactical Systems Marketing.

• **George Keen,** chief, Manufacturing and Industrial Engineering, Electronics Division, participated in a panel discussion on military standards for work measurement at the American Institute of Industrial Engineers, L.A. chapter, monthly meeting.

• **Kenneth H. Rogers,** Ventura Division engineering specialist, has been elected secretary of the Pacific Missile Range Section of the AIAA, Pt. Mugu. Rogers was installed into office by retiring chairman **Ray Lavi,** manager of Ventura's Aeronautical Target Systems Marketing.

• **Dr. William L. Parker,** head of the Strategic Missile and Space Systems Department, Electronics Division, has been appointed to the new position of vice president and assistant to the division general manager for Strategic Systems.

• **The most** senior employee in Northrop Corporation, **C. Paul Bonham,** engineering specialist, retired June 27 from the Aircraft Division with 35 years and seven months service.

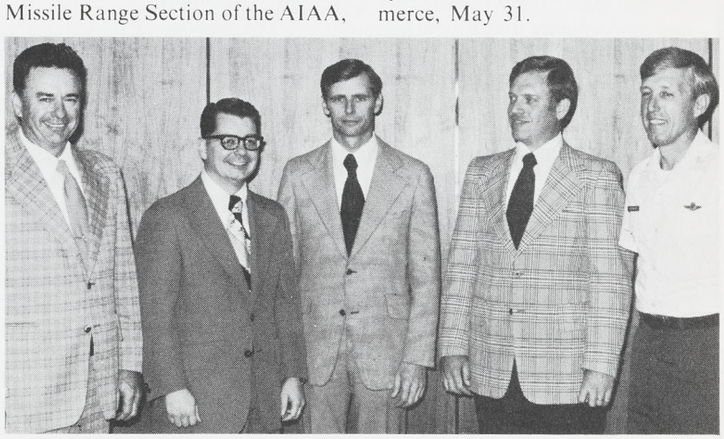
• **Walter L. Curtis** has been reassigned as special assistant to the vice president, Northrop International, due to the closing of the Hong Kong office. **Raymond M. Detmers** has been appointed corporate director, International Operations Support, reporting to C. R. Gates, vice president, Northrop International.

• **John R. Wharton,** Wilcox Electric, Inc., Northrop subsidiary at Kansas City, has been appointed International Equipment sales manager. He will be responsible for all equipment sales outside the United States and Canada.

• **H. W. Jones Jr.,** manager, Library Services, Aircraft Division, presented a paper entitled "Coping with Classified Material" to the 66th Annual Conference of the Special Libraries Association, June 10.

• **Al Locher,** manager, Audio Visual Services, Aircraft Division, earned his master's degree in communication arts in June from Loyola University, Los Angeles.

• **Christy Cockrell,** administrative clerk, Aircraft Division, won the first runner-up spot in the Miss Carson beauty contest sponsored by the Carson Chamber of Commerce, May 31.



COL. FRANK LENAHAN, right, commander, Air Force Plant Representative Office, presented certificates to Captains David Spencer, Donal Moulton and John Schafer, upon completion of their 43-week tour of duty at Northrop as participants in the Education With Industry Program. At left is Jim Anthony, Product Support.

NORTHROP PACIFIC, INC.

Teamwork and Flexibility Are Keys to NPI Success

Close-Knit Team Is Proud of Its Work

Teamwork and flexibility are the keys to success Northrop Pacific, Inc., (NPI) has achieved. This is the impression you get after reviewing the activities and performance at NPI.

Located in Long Beach and employing approximately 125 people, Northrop Pacific is a wholly-owned subsidiary, reporting to the Aircraft Division.

In addition to enjoying a prominent position in commercial sales of floor panel material to domestic and foreign airlines, NPI produces key components for the Aircraft Division.

Pride in Workmanship

"Because of our small size," says Frank Merrell, plant manager, "we are able to respond quickly and economically to the needs of the Aircraft Division and our other customers. We are a team with very high morale and operate quite profitably. Our employees take pride in their work and our performance and product quality bear this out."

Included in that performance have been 20,000 stringer clips per month for the Boeing 747; 3200 square feet of floor paneling for each 747 aircraft; over 1300 pylons and over 400 fuel tanks for the F-5E aircraft.

Centrally Located

NPI is centrally located for its employees who live in the Long Beach, South Bay and West Orange County areas. In addition to the major benefits offered all Northrop employees, NPI personnel enjoy the many benefits of working for a small company.

Off the job, employees remain close also, Merrell noted. "We had a deep sea fishing outing this spring and an open house and plant tour for families in June. At present we are planning a plant picnic."

By working in a creative environment, Northrop Pacific has demonstrated a capability for designing, developing, and producing products that are both innovative and suitable in meeting constantly changing customer requirements.

Hot Bonding Technique

In one area, floor paneling, Northrop Pacific made an important switch to a hot bonding technique from the standard cold bonding which was a glue and clamp procedure.

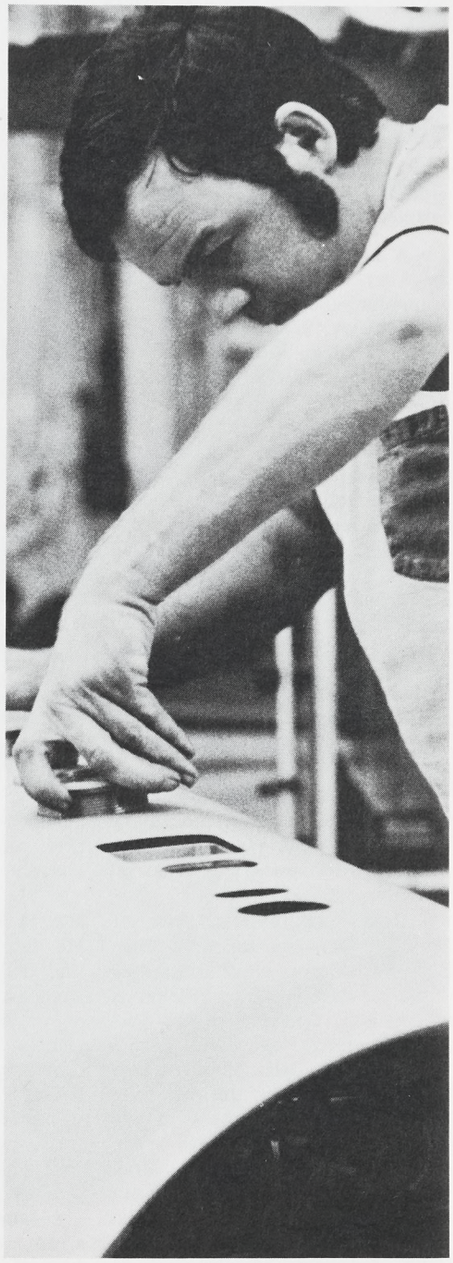
"The standard panel was good for only 25 pounds per square inch impact resistance. With the new method, we produce panels that have been tested to withstand 50 pounds per square inch impact resistance which is quite an achievement in the state-of-the-art," Merrell said.

The Process Control Laboratory under the direction of John Meehan, director, Quality Control, performs all physical and chemical testing of new materials introduced into the product lines. Up to 150 separate tests have been conducted on the floor panel line alone.

Uses New Materials

NPI manufactures bonded sandwich floor panels using balsawood, PVC, and honeycomb nomex cores with aluminum, fiberglass or phenolic facesheets.

In addition to high employee team spirit, Merrell feels Northrop Pacific's smallness and lack of complicated systems have contributed to its success.



INSTALLING ATTACH BRACKETS into a 275-gallon fuel tank is James Matchie, mechanical assembler. Northrop Pacific has manufactured over 400 external 250- and 275-gallon fuel tanks for the F-5E.

Jones Steps Down as Board Chairman; Continues as President, Chief Executive

The board of directors of the Northrop Corporation Wednesday, July 17, accepted the resignation of Thomas V. Jones as chairman of the board. Mr. Jones remains as president and chief executive officer of the company.

The board at its regular monthly meeting acted on recommendations contained in a report prepared by its Executive Committee as the result of a six-month investigation of the company's business operations, primarily in the international field.

The board designated Richard W. Millar, chairman of the executive committee, to assume the additional responsibilities as acting chairman of the board. Mr. Millar has been a member of Northrop's board of directors since 1946 and is the senior member of the board.

Leadership Cited

In recommending the election of a new chairman, the Executive Committee recognized that Mr. Jones "has contributed greatly to the success of the company" and cited his "leadership in reorganizing the company . . . and earning for the company a reputation for performing its contracts on time within cost commitments and at a reasonable profit," adding that Northrop's international business and growth in sales and backlog "can to a large measure be credited to his efforts."

"Even with this perspective in mind," the report stated, "the committee has concluded that Mr. Jones as chief executive officer must bear a heavy share of the responsibility for the irregularities and improprieties noted in this report, for the atmosphere within Northrop which contributed to those shortcomings, and for the failure to concern himself with the functional weaknesses and pressures within management which have brought the company to its present circumstances."

Mr. Jones, 54, was elected president in May 1959, chief executive officer in 1960, and chairman of the board in April 1963.

Sales, Earnings Up

The company reported sales, income and earnings per share results for the second quarter and first half of 1975 that were markedly higher than those for the respective periods a year ago. Second quarter sales of $247,122,000 were 17.5% above the 1974 figure; income of $5,458,000 was 16.8% higher and primary earnings per share for the second quarter were $1.42, an increase of 14.5%. For the six-month period the company recorded sales of $460,704,000, a 15.3% increase over the first six months of 1974. Net income was $10,152,000, an increase of 40.9%, and six month earnings were equivalent to $2.69 per share, a 42.3% increase. The company's backlog at the close of the six-month period was $1,007,877,000, down 12% from the backlog on the corresponding date a year ago.

(In releasing the earnings figures, the company noted that reviews by several government agencies are in progress and, it is understood, some of these studies may require further time for completion. The company, of course, does not know what the conclusions will be. There are several contingent liabilities which must be evaluated as the facts become known. Certain of these contingencies are discussed in the report of the Executive Committee, the contents of which are being studied in detail for financial impact. The company management has reached no conclusions at this time which would require any further provision of a material amount for costs or expenses.)

On November 20, 1974, after receiving a special report prepared by independent outside auditors following disclosure that the company had made illegal political contributions, the board announced its intention to designate a new president within 18 months. In its report, the Executive Committee said that the board intends to select, by June 1976, "a new president who is also qualified to become the company's chief executive officer." In recommending the election of a new chairman and Mr. Jones' continuation now in his present capacity as president and chief executive officer, the Executive Committee said that it "believes it is in the shareholders' interest to have his services at this time, especially given the absence of an apparent successor . . . Mr. Jones can play an invaluable role in this difficult transitional period by providing continuity and assisting the company in dealing with the consequences of the facts disclosed in this report. The committee is counting upon him to do so. His contributions in this respect will be one of the important factors to be considered by the board at the appropriate time in evaluating whether the interests of the company and its shareholders would justify his continued services to Northrop as chief executive officer, or in another responsible capacity."

Committee Report

Following its extensive investigation of the company's dealings with consultants and commission agents, the Executive Committee reported that only two instances of improper payments related to sales efforts have been discovered. These amounted to $450,000 paid to an independent agent of the company on his representation that the money was required for two Saudi Arabian generals. These payments were previously reported in the committee's interim report on June 5, 1975.

A suggestion in the interim report that $15,000 paid to an Indonesian agent might have been used to make a gift to an Indonesian politician was not subsequently confirmed by the investigation. Similarly, the committee's report states that in the case of a $4400 payment, which the interim report indicated was authorized by a company official to be paid to a tax assessor in Iran, "some doubt exists about whether the payment . . . was actually paid to the government official."

No 'Slush Fund'

The report stated that "while the transactions . . . reviewed in this report did relate to disbursements made or committed involving about $30,000,000, the Executive Committee's investigation has shown that nearly all these sums were disbursed pursuant to agreements with consultants and commission agents. The company possessed no right to control the ultimate disposition of the funds, once disbursed to these independent representatives. Thus, contrary to certain public reports, there was no $30,000,000 'slush fund'."

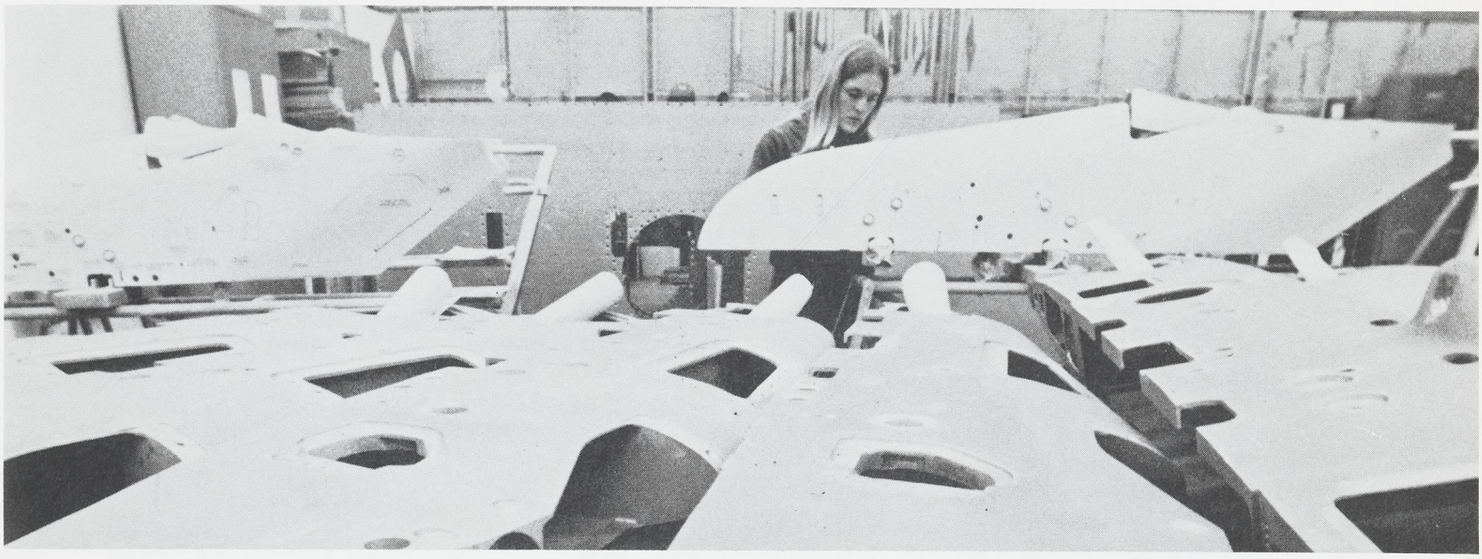
The committee concluded its report by expressing its "confidence in Northrop's continued ability to produce quality products and to compete vigorously and successfully in the United States and abroad."

"Northrop is a company that has always made its own future through the dedication of its people and the quality of its products," said Mr. Jones. "Our success is the result of what I believe to be the finest team of people in our business, working together.

Looking to Future

"We've just completed one of the most successful first halves in our business history, and there has never been a time when the company has been in a stronger position to serve the needs of all our customers in this country and around the world," he said. "I believe our opportunities are outstanding, and as president and chief executive officer, I am confident that together we will achieve even greater success in the future."

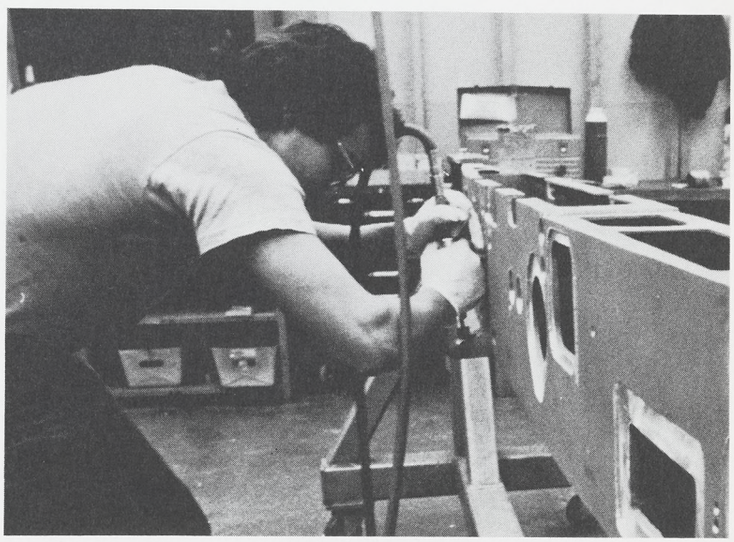
Northrop Pacific Meets Customer Needs



JOANN ERICKSON PERFORMS decaling and marking duties on all pylons produced at Northrop Pacific. Employees are a team with very high morale and operate profitably.

PERFORMING FINAL installation of electrical harness on pylon assembly is Anita Wells, mechanical assembler, one of 125 persons comprising the Long Beach team.

HAND FINISHING TITANIUM sheet metal for F-5E fighters is Vincente Guadiana. NPI produces parts for the afterburner assembly on the Tiger II aircraft.



ARTURO PADILLA, bench machinist, hand-machines attach clearance holes on centerline pylon destined for F-5E aircraft. Company has produced over 1300 pylons.

Energy Conservation Still Important-Riggins

There's gas in the pumps. Automobile speeds are picking up again, and the energy crunch of last year seems to be fading from public consciousness.

But not at Northrop.

"Energy conservation is being pursued just as hard today as it was when long gas station lines existed. We are just as concerned about getting enough power to keep our machines and equipment operating as we were at the height of the energy crisis," said H.E. Riggins, vice president, Materiel and Facilities, corporate office, who is responsible for coordinating Northrop's program to cut energy usage.

"We got solidly behind the energy conservation program in the beginning because it appeared to us to be a matter of economic survival," Riggins said. "All of us had to do something fast or we faced rationing and curtailment of business operations, with its serious threat of reduced employment."

Still Saving Money

The Northrop energy chief said that conservation saved the company considerable money and is still doing so. "This does not always show up on the ledger as a definite profit," he said. "The cost of energy has skyrocketed so greatly in recent months that our actual bills are much higher than they were before the energy crisis started. Nevertheless, there is a genuine and highly desirable savings involved here. Without our hard-line on conservation we would be paying about $400,000 a year more for electricity just in our California operations alone than we are now."

The wide expanse of Northrop activities, which range from building aircraft to construction, communications, electro-optics, tactical systems and others, make it difficult to arrive at an exact formula for determining total corporation energy savings. However, corporate officials, basing a projection upon the California operations, felt that the drive is reducing energy costs, directly and indirectly, by more than a million dollars a year throughout the entire corporation.

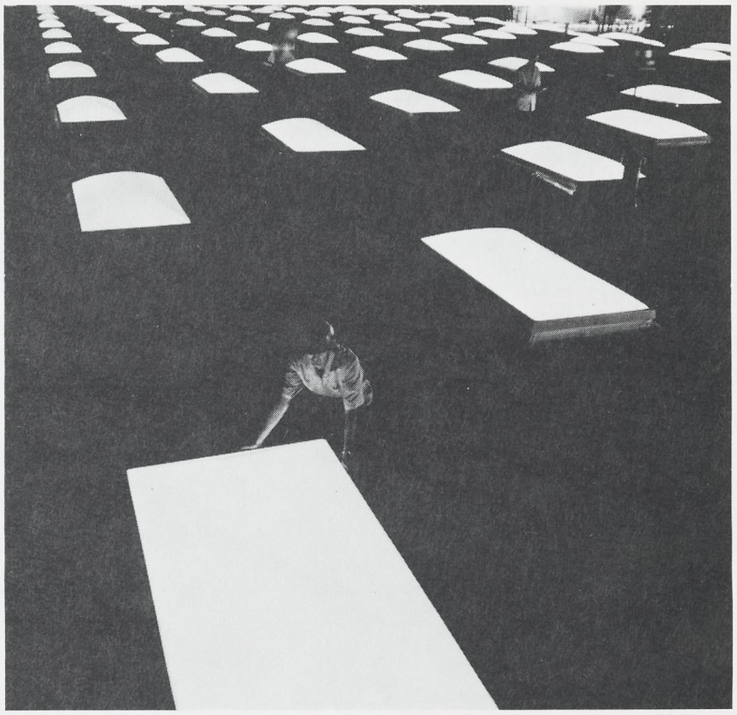
"When we say that energy conservation is good business at Northrop, we are looking beyond the actual dollars and cents involved," the energy chief said. "There are less tangible benefits that also must be recorded on the profit side of the ledger."

Painting Machinery

An example of this is when a 5000-square-foot machine shop at one facility needed painting. The ordinary machine shop is a drab place of grays and dark machines. This organization departed from convention to use bright, contrasting colors that improved the light level 10 per cent. This was a free bonus since the machines had to be painted anyway. The color scheme features contrast with some machines white, pink, cerise and even lavender.

Northrop has closely monitored the results of its energy conservation program. "We have done this because the company intends its program to be permanent. We are constantly reviewing our procedures to see which are productive and should be expanded," Riggins said.

Most of the ideas in Northrop's continuing energy conservation program are coming directly from company employees. One division sponsored a suggestion award contest to stimulate interest in conservation. It received 287 suggestions, most of them with merit.



CHECKING THE skylights in the factory areas at the Electro-Mechanical Division are night maintenance crewmen Dale McBride, foreground, and Gene Webber.

Suggestions received in this organization and in other Northrop divisions have often been unusual. One group placed ping pong balls on top of heat treat tanks to reduce evaporation. This saved heating energy needed to maintain proper temperatures in the tanks.

Another suggestor in a different division got a stopwatch and timed the company's Com-Bus stops. He found that dropping passengers at a busy area resulted in slower disembarkation. As a result, the stop was changed to a more protected area. This cut bus idling time in half.

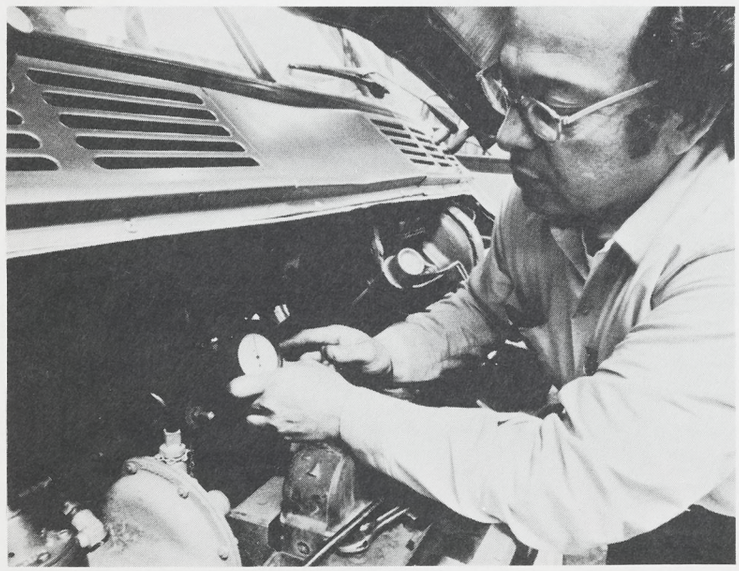
Reduce Lighting Needs

In one Northrop factory area an employee's suggestion resulted in placing 500 plastic skylights in the roof to reduce lighting needs in the daytime. This permitted cutting out all artificial lights from 10 a.m. to 2 p.m. each day in winter months and from 8 a.m. to 4 p.m. in the summer. At the same time it increased available light during these periods.

At another Northrop division, natural gas systems, which enable engines to run cleaner and more economically, have been installed on 12 motor vehicles and more conversions are scheduled. Of the 100 utility carts used within the facility, 24 have been converted from gasoline fuel to electric re-chargeable power sources.

Riggins pointed out that so much had been done in energy conservation at Northrop that big dramatic savings are no longer possible for any one single operation.

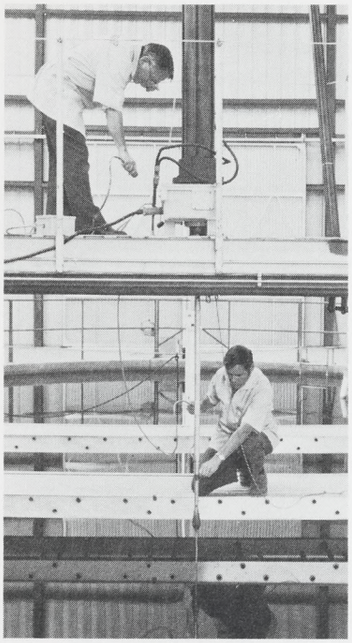
"However," he said, "we are meeting this challenge by 'piling up pennies,' as we call it. We trim an impeller on a 300 horsepower air conditioning water pump. This reduces output 40 horsepower without reducing our requirements. Similar suggestions for making small cuts — penny savers in themselves — are building up to a really worthwhile accumulation of saved energy. These pennies in the aggregate make dollars."



MAINTAINING THE natural gas systems that have been installed in 12 Aircraft Division vehicles is the job of Manuel Rubio, auto mechanic general.

ENERGY SAVINGS is explained to Ventura Division employee Janice Yamashita by Walt Claycomb, Energy Savings Committee secretary. Scorecard posters are updated each month.

Indoor Pool Performs Vital Functions



ACOUSTIC DESIGN Manager J. A. Rummell, at top, connects cables used to carry readout to adjoining laboratory while engineer Milo Thomas makes adjustments on MK 30 hydrophone.

Ventura Division Engineers Use Pool for Various Underwater Tests

Probably the largest indoor pool in the Conejo Valley and Ventura County is located at the Ventura Division where the 250,000-gallon pool performs a number of vital functions.

Marine Systems' J. A. Rummell, Acoustic Design manager, said the pool, which is 50 feet long by 30 feet wide and is 30 feet deep, is used to test various underwater sound devices and systems.

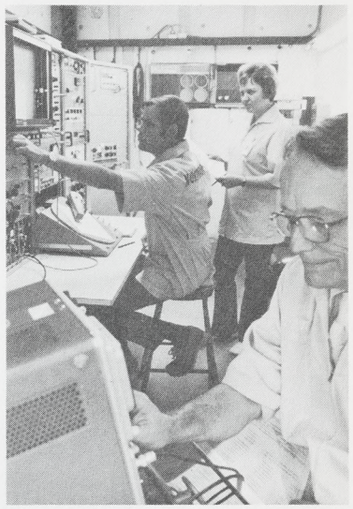
"Our regular tests include the testing of a complete MK 30 underwater target as well as acoustic and sonar projectors such as are used with the MK 30 and the NT-37C torpedo," Rummell said.

Responsiveness or sensitivity of underwater hydrophones are also tested and checked in the pool which is equipped with a variety of mechanical devices used to raise and lower equipment to various water depths. A hydraulic ram is available to raise and lower a complete MK 30 which weighs approximately 2500 pounds.

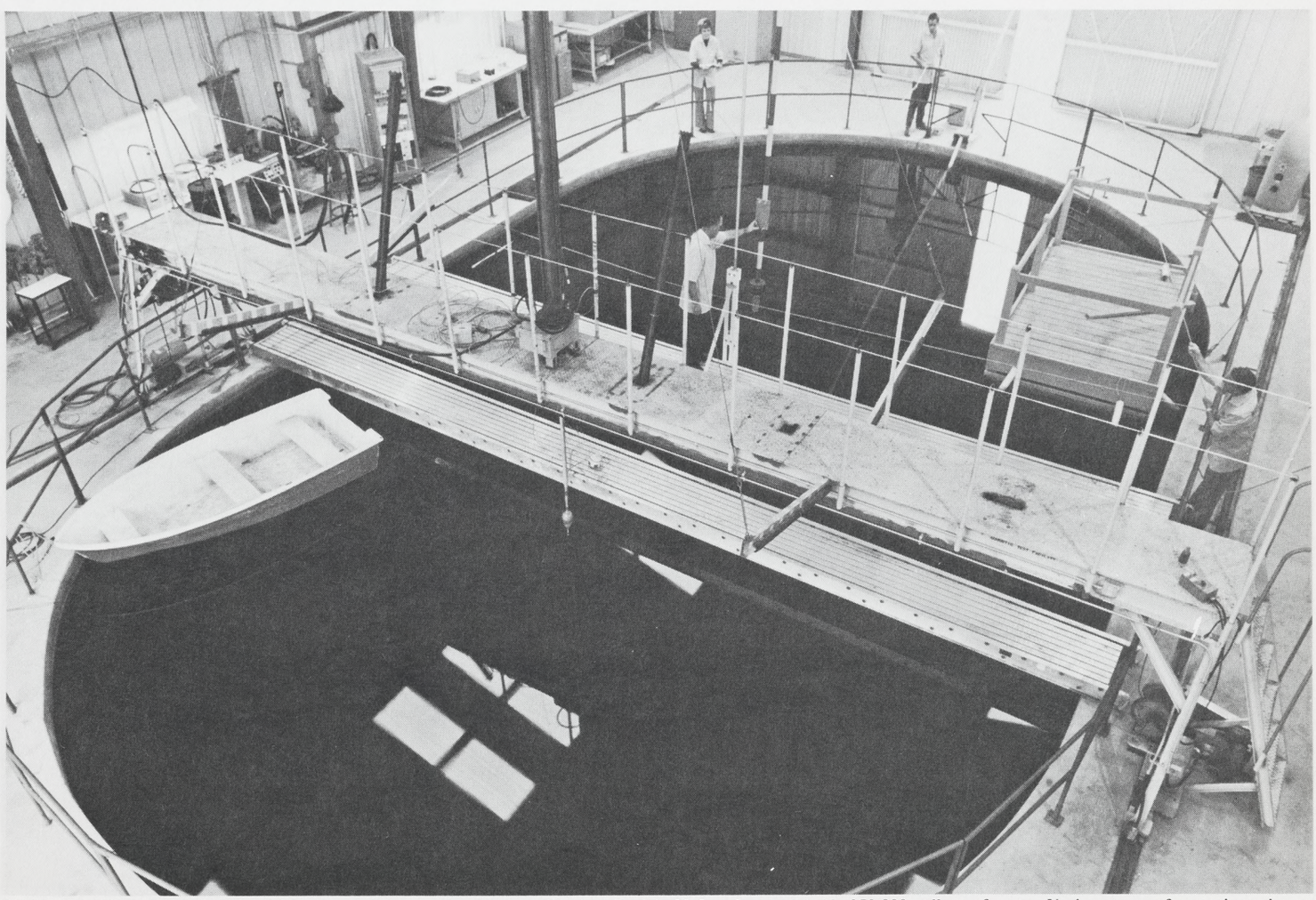
The pool has a hemispherical bottom and is kept sparkling clean by Maintenance.

Other uses include buoyancy tests for target aircraft which are recovered from water and in testing new designs for various types of acoustic devices and instrumentation.

One use not normally considered is that of fire protection as the 250,000 gallons of water can be pumped out and used to fight fires.



STUDYING READOUT of acoustic tests in laboratory adjacent to Ventura Division's acoustic test pool are J. A. Rummell, foreground, Milo Thomas, at console, and Jean Morse. Rummell is Acoustic Design manager while Thomas is a test engineer and Morse an inspector. Electronic equipment used with test pool includes a polar recorder, dual pen X-Y-Y linear recorder and other test and calibration instrumentation.



OVERALL VIEW OF THE 50 by 30 foot acoustic test pool at Ventura Division. Pool is 30 feet deep and holds 250,000 gallons of water. Various types of acoustic equipment are checked in pool including complete MK 30 underwater targets. One use not considered is that of fire protection. Water can be pumped out and used to fight fires.

Morrow, Cholley Give Aid To Auto Accident Victims

Rick Morrow's newly acquired Citizens Band radio helped him and Ron Cholley aid six critically injured traffic victims.

The two Aircraft Division machinists were on their way to Parker Dam in Arizona for the Memorial Day Weekend when they saw the accident, some 12 miles east of the community of Desert Center on Highway 177. Rick made quick use of his Citizens Band radio. Using his call name "Under Dog" he quickly contacted the Desert Center Fire Department.

While waiting for help, they stayed on the scene giving what comfort and aid they could to the victims, setting out road flares and directing traffic.

Longest 12 Minutes Known

The fire department, ambulances and Highway Patrol officers arrived 12 minutes after Rick's call. For Rick and Ron, however, they were the longest 12 minutes the two young men had known. It became especially hair-raising when two of the victims stopped breathing, but when the ambulances left all six were breathing again. The ones that could talk thanked Rick and Ron as did the Highway Patrol officers as they were leaving.

Before continuing on to their destination Rick and Ron had one more job to do. They pulled four cars out of the sand and back onto the highway. These had been directed off the road to make way for the emergency vehicles.

The people in Mill Area 40 are especially proud of these two fine young men and of the great job they did.

Ambrose Hall, one of their coworkers, ventures to say that for the accident victims "UNDER DOG" came up "TOP DOG."

Credit Union Declares Dividend

The board of directors of the Northrop Credit Union at Hawthorne has declared a dividend at the annual rate of seven per cent at the June meeting.

The dividend was paid to shareholders of record on June 30. The amount of $685,644.34 was distributed to approximately 16,400 members.

RICK MORROW talks on his Citizens Band radio he had acquired just before the trip to Parker Dam while Ron Cholley looks on. Photo by Ambrose Hall.

New Discount Program in Effect

Northrop has entered into a new agreement with the Hertz Corporation which provides all employees a 30 per cent at-the-counter discount on regular time and mileage rates within the United States and Canada. The new discount program became effective July 1.

Hertz I.D. cards were distributed to all Northrop employees with paychecks June 27. To assure receiving the at-the-counter discounts, cards should be used for identification when renting Hertz automobiles. Use of the card is not limited to business travel.

Recreation Notes

NRC TRAP AND Skeet Club members pause during recent shoot at the International Trap and Skeet Range in El Monte to compare scores. The club is enjoying its best season in recent years, reports commissioner Clark Linss, at right. Members from left are, Jim Javis, Portia Linss, Chic Deily and Curt Routh.

★ ★ ★

A big family fun weekend has been scheduled by the Northrop Recreation Club for all employees Sept. 27-28 at Knott's Berry Farm in Buena Park.

"We are really excited about this picnic fun package," said Phil Sherman, special events, Aircraft Division. "Not only will employees be able to enjoy a family-type picnic complete with boxed lunches, but the whole Knott's Berry Farm facility will be open to everyone for just one incredibly low ticket price."

NRC has made special arrangements for employees to gain unlimited use of all attractions, except the shooting galleries and row boats, for $3.50 per person. Children three years and under are free.

"The Knott's people have set aside their large grassy picnic area next to Independence Hall for our families. Be sure to bring your own blankets or folding chairs to sit on. Special parking has also been set aside so everyone can enjoy the picnic and then walk across to the amusement park," said Sherman.

Employees not wishing to pack their own picnic lunches may purchase tickets for boxed lunches at the time they buy their tickets for the picnic. Lunches feature Knott's famous fried chicken with salad, roll and beverage for only $2.45.

Refreshments will be available in the picnic area as well as continuous bingo games with prizes furnished by NRC.

Tickets will go on sale Aug. 4 at all facilities for the family fun weekend. The whole Northrop family is invited!

★ ★ ★

Northrop Night at Laserium will be held July 27, 6:15 p.m. at Griffith Observatory.

The cosmic laser light concert is Los Angeles' newest, most spectacular family entertainment event. Families can enjoy special group performances in an intimate setting "under the stars" inside the observatory.

Tickets are available at a discount price for $2.50 for all ages. Parking is free. Contact your Personnel Activities.

★ ★ ★

Family Days at Magic Mountain are coming up on Saturday or Sunday, Nov. 1 or Nov. 2 exclusively for Northrop employees, their families and guests from 10 a.m.-6 p.m. Tickets, on a first-come, first-served basis, are $4.50 per person and entitle you to more than 50 exciting rides and attractions. These are available at your Personnel Activities Office.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Dodge, 1970, ¾-ton, 383, p/s, chassis mounted 9½' Open Road camper, $2700. 213-645-8057.

Fiat, 1974 124 Sport Spyder, still on warranty, $4800; Chevrolet, 1964 Impala, $475. 213-650-5468.

Cougar, 1971, air, auto., p/s, $2095. 213-328-3306.

Ford, 1974 Pinto, 2300 cc eng., auto., air, $2995. 213-832-3129.

Truck, 1972 Chev., ¾-ton, p/s, p/b, a/c, w/shell camper, $2800. 213-644-3125.

Motorcycle, 1966 305 Honda Superhawk, new tires, batt., $350. 213-371-5308.

Nova, 1973, a/c, p/s, p/p, V-8, auto., Hatchback, $1895; motorcycle, 1969 Yamaha, 250cc, 21" front, $225. 213-675-7082.

Motorcycle, 1969 Yamaha 250, dirt, 21" front whl., many extras, $225. 213-326-2453.

Ford, 1973 Gran Torino wagon, $3200. 213-372-7028.

Buick, 1969 Riviera, full power, a/c, $1325. 213-542-6009.

Volkswagen, 1970 7-pass. bus, reblt. eng. trans. AM/FM stereo radio, $2100. 213-373-1970.

Pinto, 1973 Runabout, mags, 4-spd. trans., $2000. 805-942-4433.

Motorcycle, 1970 Harley Davidson, fully equipped, 1200cc, $2250. 213-758-6045.

Chevrolet, 1961 Biscayne, 4-dr., new tires & bks., $150. 213-679-4879.

Volkswagen, 1966, sunroof, $650. 213-375-7921.

Mercedes, 1966 230 SL, 2 tops, 74,000 mi., $6000. 213-372-1457.

Pace Arrow, 1972, 20', $6995. 714-925-3516.

Motorcycle, 1971 Honda SL175, 3000 mi., $525. 213-377-5059.

Volkswagen, 1969, 4-spd. stick, recent tune-up, $1250. 213-973-1722.

Ranchero, 1966, 6-cyl., stk., $850. 213-372-1347.

Plymouth, 1968 Satellite, p/s, p/b, a/c, 318 i.d. eng., $750. 213-373-1434.

T-Bird, 1968, 44,000 mi. h/top, air, power, AM/FM stereo, $980. 213-398-0931.

Volkswagen, 1964 bus, 4-cyl., 4-spd., sleeps 2-3, $950. 213-676-7903.

Toyota, 1969 Corona, reblt. trans., $800. 213-777-1515.

Plymouth, Barracuda, 1965, $600. 213-973-1581.

Mercedes-Benz, 1972, 250 sedan, 35,000 mi., auto. trans., p/s, a/c, $6000. 213-379-3419.

Motorcycle, 1971 Harley Davidson, 1974 FLH Dresser, have oil cooler, $2495. 213-632-0944.

Dune Buggy, 1961 VW, 40 h.p. 4-spd. transaxle, tow, & light bar, $600. 213-676-5349.

Jaguar, 1972 XJ-6, 36,000 mi., 4-spkr. stereo, many extras, $6925; motorhome, 1973 Calypso, 23', 10,000 mi., completely self-contained, $7500. 213-396-2396.

Volkswagen, 1974 convt., stereo, radials, only 10,000 mi., $3295. 213-541-8181.

Miscellaneous For Sale

Aquarium, 20 gal., fluorescent light, access., fish, $25. 213-675-7357.

Hi-Chair, Tommy Tucker, convt. into play set, $35; pots & pans, porcelain, orange w/daisies, $20. 213-837-5551.

Dining Room Set, maple, table, round, 4½' dia., 1 leaf, Early American style, 4 chairs, $150; coffee table, 2 end tables, Early American distressed, $100. 213-325-3404.

Camera, Polaroid 210, flash attach., used once, $15; oven/broiler, Toastmaster, $12.50; wheel covers, 4 15", $6. 213-674-7743.

Fireplace, free-standing, revolves, complete w/roof jack, yellow, $125; occasional chairs, $75; couch & chair, $175. 213-679-6429.

Hide-a-bed, Herculon, $160. 213-373-6139.

Pup, St. Bernard, pedigree, $50. 213-830-7398.

Flash Unit, Vivitar 292, 2 extra battery packs, $90. Box 701.

Miscellaneous For Sale

Sofa, $80; love seat, $45, or $125 both, white, tables also avail. 213-986-3793.

Beds, twin, complete w/box springs, mattresses & frames, used 3 nights, some linens, in orig. bags, $160. 714-894-5769.

Camera, Nikonis II w/lens, under-water meter & flash, complete, $250. 213-835-4013.

Golf Clubs, 9 Wilson irons, pitching wedge, $20. 213-325-5245.

Wheels, chrome 14" set of 4, w/nuts, $35; air conditioner, window-type approx. 24x26½ dia., G.E. 25,000 b.t.u., 3 yrs. old, $125. 213-327-4089.

Table, formica, white walnut grain, 42" w. w/2 leaves, extends 7', $35; chairs, 2, newly covered naug., gold, $5 ea. 213-370-8835.

Window, 3-panel alum. side sliding, 4'x8', sliding panels & screens, $30. 213-346-3802.

Washing Machine, Whirlpool, portable, avocado, $60; typewriter, IBM elec., exec. model 8, $65. 213-671-2676.

Sofa, 2-pc., straight & curved sections, 9', blue, $85. 213-396-5837.

Sofa, 8' & love seat, blue w/gold leaf design, 2 yrs. old, $275. 213-630-4320.

Dinette Set, 5-pc. by Virtue, black vinyl chairs, table, formica top, $100. 213-370-6900.

Piano, Kimball consolette, maple, $750. 714-842-5968.

Stove, O'Keefe & Merritt, 30", brown, $50. 213-326-7922.

Sailboat, 26' Seabird, 8 h.p. diesel inbd., RDT, anchors, many extras, new paint, $4200; organ, 4-rhythm, C&G chord, Sears, $95. 213-320-8297.

Air-Conditioner, General Electric, 1-ton, 220 v., refrigerated, window-type, $25. 213-540-1208.

Radial Tires, 6, Bridgestone, 600x14, nearly new, $25. 213-378-3532.

Radio Control Transmitter Orbit 3-channel, receiver, batt. charger, 2 servos, Pierce Arrow 6' w/s glider kit, $85. 213-372-6620.

Siding, asbestos, white, never used, 500 sq. ft., $20. 213-833-6045.

Wheelchair, Arrow, $50. 213-759-7829.

Organ, antique, player, upright, needs some bellows, $500. 213-672-1439.

Wheelchair, Abbey Rents, padded arm rests, safety belt & leg guards, adult size, $150. 714-772-7897.

Sailboat, 25', sleeps 5, Coronado 5, many extras, $6400. 213-375-4826, 213-749-8144.

Aircraft, BD-5D, Serial #1460, $800 & $4000 bal. to Bede upon delivery. 714-846-2148.

TV, 21" console, b&w, $45; hide-a-bed, black, $35. 213-675-5739.

Pups, Doberman, black & tan, 4 female, 2 male, $30 ea. 213-291-1647.

Doghouse, 18" x 34", $10; fan, Kool Aire, 3-spd., $12. 213-675-6020.

Pup, Irish Setter, pedigree, $175. 805-942-2042.

Bicycle, Schwinn Sting Ray, $35. 213-421-5470.

Revolver, 22 Cal. Hopkins-Allen, mfd. in 1886, $60. 213-429-9487.

Camp Stove, Coleman, 3-burner $18; cots, 2 alum., $4 ea. 213-320-5281.

Tires, 4 almost new, Goodyear, E78-15 on Chev. rims, 5" lugnut patt. $100. 714-870-8754.

Repair Manuals for Toyota Corona Mark II, chassis, eng. a/c, emission, 1971, $10. 714-527-1946.

Exerciser, Slim-Gym, $25. 213-370-9119.

Drapes, beige, just cleaned, 44" l., 121" w., $15. 213-831-6882.

Boat, 8', glass, 6 mos. old, oars, brass, oar locks, $175. 213-377-1074.

Pups, AKC reg. toy poodles w/papers, apricot male, $200; black female, $175. 213-370-6400.

Meat Slicer, Rival, elect., $25. 213-676-1018.

Sofas, 2, $150 ea; chairs, 2, $100 ea., other items. 213-541-8181.

Beds, 3 dble., w/headboards & frames, less than a year old, $100 ea. 714-956-0348.

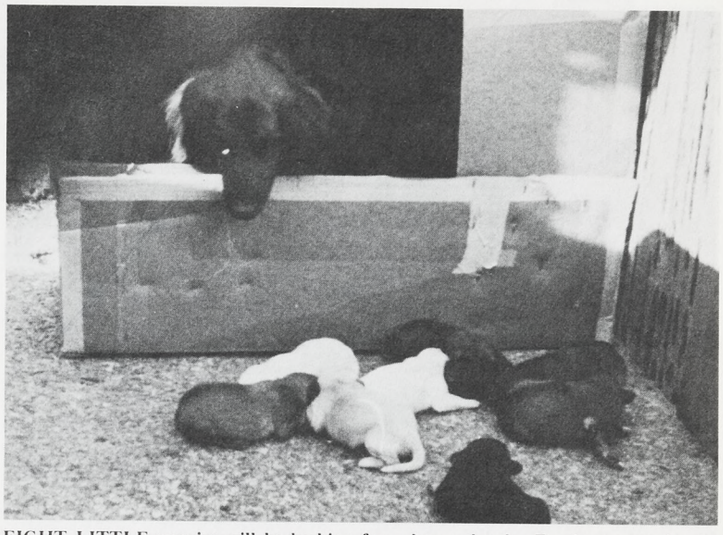
Panels, 25 dk. aqua, corrugated, fiberglass, 6' lg., $50. 213-532-2142.

Organ, upright, player-type, very old, $500. 213-672-1439.

Waterbed, king size, 2 yrs. old, still under 5-yr. warranty, self-contained unit, $50. 213-371-8907.

Chair, stratolounger full reclining, brown naugahyde, $75. 213-377-7670.

Spreader, Scott, & 30-gal. lawn roller, $30. 714-968-7987.



EIGHT LITTLE puppies will be looking for a home shortly. Employees coming to work in the AF Building on Monday, June 30, noticed a female dog around their facility that looked like she might have had her pups, but where. Alarm for the safety of the pups came when the sprinklers were turned on. Diana Welsh and Barbara Holmes went frantically searching through the ivy for them for fear of them being drowned. They came up with eight. Anyone wanting one of these cute little furry things for a pet may contact Diana on ext. 5171, Aircraft Division, who so graciously made a home for them until they are weaned. This should be around July 26 or 27.

Miscellaneous For Sale

Projector, Bell & Howell Autoload, Mod. 461-A Super 8, 500' film, 30" x 40" screen incl. $60. 213-675-2422.

Divan-Bed, used twice, $89. 213-649-5349.

Bedroom Set, walnut, dual h/board w/box springs & mattress, dresser, mirror, desk, formica tops, $150; bicycle, 10-spd. men's, 1 yr. old, $40. 213-644-3922.

Refrigerator, Frigidaire, bronze, 17 cu. ft., $150. 213-670-0060.

Tap & Die, complete set, $95. 213-675-5856.

Truck Tires, 6 10x16.5 8-ply nylon tubeless, hvy. duty & wheels, mounted, $100 ea. 213-645-8373.

Hutch, maple, $150, other misc. items, various prices. 213-375-6114.

Wanted To Buy

Potter's Wheel, elec., or manual, in working condition. 213-644-2392.

Antiques, glass, china, jewelry, will buy estates. 213-379-3485.

Waterbed, complete w/frame, mattress & pad, heater if possible. good condition. Will pay reasonable price depending on condition. 213-679-5644.

Mummy Sleeping Bag(s), old Army style. 213-973-0457.

Roll A-way, reasonable, good condition. 213-329-7998.

Golf Clubs, women's. 213-373-3305.

Piano, any condition. 714-956-7838.

Service Manual for 1962 Chevrolet. 213-379-7094.

Metronome, 213-675-7025.

Slide Trays, circular, & horizontal, 80, for Sears projector. 213-375-7701.

Dog, male English Springer Spaniel for breeding. Must be AKC registered. 714-842-3903.

Car, 1966-1969 Comet, Dart, Falcon or Rambler. 213-831-1014, 213-548-1891.

For Sale or Trade

Motorcycle, 1970 Moto-Guzzi, 750 cc, $1300 or trade for Corvette & cash difference. 714-995-4053.

Engine, 1941-1948 Ford V-8 flathead, $35; cabin cruiser, 18' outbd., glass o/wood, 2-whl, trailer, Mercury Mark 78 70 h.p. motor, $600 or trade items of equal value. 213-329-4090.

V.O.M. RCA WV-38A, $30; audio generator, Eico, Mod. 377, $35; scope, Eico, 3", Mod. 435, $110 or trade for gas welding equipment. 213-941-1865.

Found

Pendant, small diamond, west end Environmental Test Lab. Aircraft Div. ext. 3954.

Lost

Watch, gold, woman's, if found call Aircraft Div., ext. 4451. 213-671-4331.

Personals

My heartfelt thanks to all of you who attended my retirement celebration & for the thoughtful & most welcome gift. JACK LIND.

Kindest regards to all who made my 21 years at Northrop a good place to work & a special thanks for the retirement party & gift. HARRY SAMUELSON.

I wish to convey my sincere appreciation for the flowers & expressions of sympathy from Jim's many Northrop friends. JUNE MINTER.

Sincere thanks to my many friends at Northrop for their kindness & concern shown to me during the loss of my beloved father. PAUL GUTT.

My sincere thanks to all my friends for the lovely things they did for me upon my leaving Northrop. LIL OCELLO.

I wish to thank all my friends & co-workers for their wonderful gift on my retirement. You will be remembered always. SHERWOOD H. ENGLAND.

We wish to thank the Northrop Recreation Club & employees who sent the lovely spray & potted plant when our mother, Mrs. Margaret Thompson passed away. It was sincerely appreciated. TED & FRANCES BROWN.

To my many friends & co-workers, I wish to express my gratefulness for your help, assistance & friendship over the many years at Northrop. CLARENCE CRAIN.

To everyone who made my retirement party such a memorable one. I want to thank each of you for the pleasing & touching farewell & lovely gifts. CHETTI GALLAUDET.

We want to thank all of Lyle's & my dear friends for the prayers, flowers & contributions. Your thoughtfulness at a time when the loss of our beloved husband & father, Lyle Batchman, is so deeply felt. DOTTIE BATCHMAN & FAMILY.

Thanks to all our wonderful friends at Northrop for their many thoughtful cards & attention during my recent illness. MR. & MRS. BILL JACKSON & CHILDREN.

Free

Dog, Saint Bernard, 3 yrs. old, female, to good home, papers. 213-327-3063.

Cat, 3 yrs. old, female, spayed, shots. 213-376-8315.

Cats, Siamese, brother & sister, 3 yrs. old, spayed, all shots. 213-370-8835.

Dog, black female, 7 mos. old, spayed, shots, ½ Golden Retriever, ¼ Black Labrador, ¼ German Shepherd. 213-325-1968.

Ride Offered-Wanted

Share ride, Mission Viejo to Plant One, 8 a.m.-4:42 p.m., Aircraft Div. ext. 4539, 714-837-8364.

Ride Wanted, share or pay, from Hollywood Blvd. & LaBrea to Hawthorne, 7:30 a.m.-4:12 p.m., Aircraft Div., ext. 5174. 213-874-3663.

MORE THAN JUST WORDS, this award from the National Safety Council to the Workman's Safety Committee, Palos Verdes, takes on added meaning in view of group members' recent actions credited with saving the life of an Electronics Division employee. (See story, page 1.) Shown holding award, received for an excellent record in reducing off-time disabling injuries, are Joe Rahiya and Dick Paramore, standing. Other committee members are, left to right around table, Ellie Misko, Jean Tobias, Don Ross, Cliff Davis, John Nygard and Davor Bozin. Missing in photo, Phil Zulneta.

Ski Club Slates Summer Fun

Undaunted by the lack of snow, Northrop Ski Club is planning a variety of summer activities.

Ski clubbers will be water skiing one weekend per month at several Southern California areas. The next outing will be July 18, 19, 20 at Lindy's Landing, Kings River, Kingsburg, Calif. Water skiers carpool and campout together and bring their own camping equipment, food and beverages.

Cost of the trip is $20 per person which includes use of boats, equipment and campsite. The club takes 32 reservations per trip on a first-come basis. For water ski information or reservations contact Harry Dunskey, ext. 2056.

The first bicycle ride of the summer took place Sunday, July 13. Cyclists met at Second Street on the Strand in Hermosa Beach and peddled their way to "Don the Beachcomber's" in Marina del Rey where they had brunch before the trip back. Rides will take place once a month all summer. For additional cycling information, contact Pattie Stockham, ext. 2426.

Other Ski Club activities for the summer include: parties and a backpacking trip Labor Day weekend.

Las Vegas Senerade

A few reservations are still open for NRC Las Vegas Serenade. Chartered Greyhound motor coaches will depart from Gate 5, Aircraft Division at 7 p.m., Friday, Aug. 15 and return Sunday, Aug. 17. Las Vegas-goers will stay at the new Howard Johnson's Hotel. Cost is $49.50. Contact Personnel Activities, ext. 2425.

SHERRY TINGLEY, club member, water skis during trip to Colorado River.

Service Awards

Harry Dunskey, M. Engineering and ILS Management Unit, and Mitch Micheletti, Advanced Development Department, Hawthorne, observe their 25th anniversaries this month to head the list of service awards for July.

Others observing July service awards are: 20-years — Loyd Reynolds, Caroline Spear and James Johnson, Hawthorne; and Paula Gardner, BSL; 15 years — Fred Woods, James Yee and Shirley Mowry, Hawthorne; Russell Kirby Jr., Palos Verdes, and Clyde Coller, Edwards Air Force Base.

June Anniversaries

Also observing anniversaries during June were: 15 years — Gary Lewis, Nils Kolderup, Gordon Singleton, William Dunn and Joseph Russo, Palos Verdes; George McGilligan, William Thomas and Glen Gardner, Hawthorne; and Jim Durey Dayton, Ohio.

Marcia's Determination Pays Off

Try working full time, going to school four nights a week from 6-10 p.m., studying every weekend, and handling three children — if you want to match what Marcia Marshall has been doing lately.

But Marcia, who recently was promoted to marketing research analyst in the Avionics Marketing Department headed by J. B. Meagher, feels it was all worthwhile. Marcia, in June, graduated from Cal State Dominguez Hills with a degree in American Business and Economic Systems. She also made the Dean's Honor List, and graduated with "great distinction" with a 3.9 average.

Marcia Marshall

"I found college exciting, stimulating," Marcia says. "It has provided me with opportunities I wouldn't otherwise have had. I think it's wonderful that Northrop, through the Educational Refund Program, provides the incentive."

Marcia also credits her recent promotion, at least in part, to furthering of her education. "This is a perfect degree for what I'm doing," she says, and adds about her marketing position: "This is the best job in the company for me."

It's taken Marcia a long time to realize her ambition. She started work with Northrop in 1967 as a secretary, working in the Special Projects area. She began college in 1970 — obtaining an AA degree at El Camino, then continued on. She was promoted to marketing research assistant in October 1973.

ENGINEERS

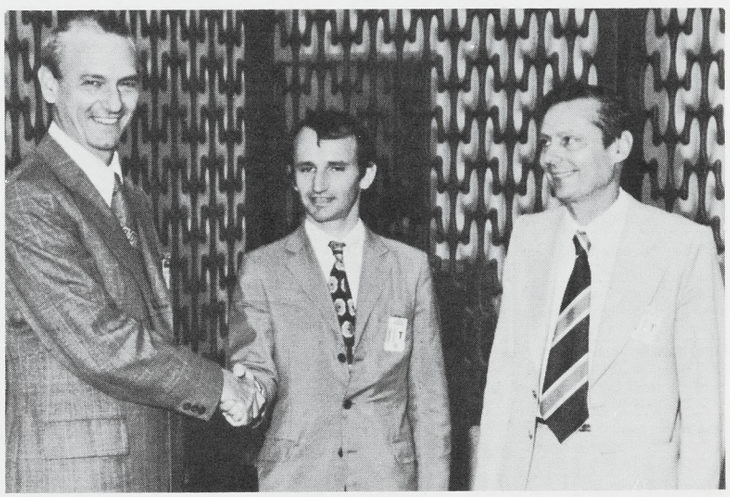
(Continued from page 1)

As for living in the U.S., the two West Germans and their families have adjusted well. They are sharing a large rented home in Rolling Hills Estates, and both have bought American cars. They now have their California driver's licenses, and their wives, Monika and Brigitte, are taking English classes at night.

There are some differences to get used to. One is the credit system here.

"In Germany you need money for credit. Here, you must have debts," said Ronald.

MARK SPONSLER, son of Bill Sponsler, engineering specialist, Palos Verdes, stands by the T-38 he flies during pilot training at Laughlin Air Force Base, Tex.



OMEGA COURSE GRADUATE Michele Alleman, second from left, of the Technical Branch of the French Navy, receives congratulations from Lloyd Jones, left, director, Product Support, following completion of BRN-7 Omega Navigation system training conducted by Avionics Department. Alleman, shown with William Portier, SFIM, sales representative, is helping test Omega system for possible use by the French fleet.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California | Vol. 33, No. 8 | August 1975

AIDATS TEAM MEMBERS who played vital role in tests leading to $3.5 million Army contract for production engineering, shown with OV-1D Mohawk, are from left: Art Gandy, Sam Lalande, Harry King, ECOM, Al Garreffa, John Lamplough, Grumman, Bob Cooper, Larry Widder, Grumman, Chuck Fuller, Chet Wetzel, Walt Davison and Bill MacCorkell. Other key division people on program, not shown are: Don Schultz, Burlie Cole, Jay Crow, Stan Ecklund, Rudy Pineda, Carlos Chong, Norio Mitsuoka and John Overholser.

Division Receives Award For AIDATS Repackaging

The Electronics Division has received a $3.5 million contract for production engineering of the U.S. Army In-Flight Data Transmission System (AIDATS).

The award, from the Army Electronics Command, is a modification to an existing contract for development of the AIDATS system, which provides field commanders with airborne reconnaissance imagery of high technical clarity in near-real time.

Under the 15-month contract, members of the Avionics Department's AIDATS program team will repackage the equipment into a smaller volume and weight requiring less power.

Significant Milestone

"This award is a significant milestone for us in this important program," said A. B. Lipscomb, vice president and manager, Avionics Department. "The work is designed to establish a production configuration."

The system recently completed successful testing at the Army's Electronic Proving Ground, Ft. Huachuca, Ariz., where it "met or exceeded our expectations in an operational environment and under simulated combat conditions," Lipscomb said. (See related story, this page.)

Modifications

Division efforts under the new contract will consist of repackaging six of the airborne boxes into two boxes and consolidation of ground station equipment, along with associated documentation and drawings. System elements will be brassboarded utilizing existing hardware wherever possible, and factory checkout equipment will be modified to accommodate the changes.

Special test equipment will be included and certain documentation will be updated. Other modifications will be made to the system's Surface Antenna Terminal (SAT) and Surface Recording Terminal (SRT).

PPD Wins Significant Awards

Precision Products Department (PPD) has recently won awards for rate gyros on two major fighter aircraft programs, and a significant contract to test and evaluate its own NIS-210-24 strapdown inertial system.

Most recent was a contract from General Dynamics for pre-production units for development and manufacture of rate gyros for USAF's F-16 air combat fighter. PPD's GR-G5 gyroscope will be used in a quadruple redundant flight system to provide outputs to the F-16 autopilot.

Earlier, the Norwood, Mass. department won a production contract to supply GR-G5 rate gyros for the flight control system of the Fairchild A-10 Close Support aircraft. Quantity is based on an estimated production schedule of over 700 aircraft.

The USAF award for strapdown system testing involves PPD's NIS-210-24. Testing will take place over a six-month period to evaluate feasibility and performance potential, and will culminate in flight tests at the Central Inertial Guidance Test Facility, Hollomon AFB, N.M.

DISCUSSING OBJECTIVES of recent USAF contract award for testing of the NIS-210-24 are, from left to right, John Gautraud, group director of Engineering; Dean Smeltzer, chief of Components; Joseph Yamron, PPD vice president and manager; Vincent Hines, Marketing representative, and Loftin Elvey, program manager.

Army Lauds AIDATS Team

For an eight-week period, four members of the Electronics Division's AIDATS program team were assigned to the U.S. Army's Electronic Proving Ground, Ft. Huachuca, Ariz., to provide technical assistance to the Army, when needed.

These four — Al Garreffa, Chuck Fuller, Sam Lalande and Don Schultz — demonstrated outstanding performance in supporting the Army's test program, as attested in a letter received recently by A. B. Lipscomb, vice president and manager, Avionics Department. The letter read as follows:

During the period, Mar. 11 through May 9, 1975, the following Northrop representatives provided maintenance support of the Army In-Flight Data Transmission System (AIDATS) testing for the U.S. Army Electronic Proving Ground (USAEPG), Fort Huachuca, Arizona:

Albert P. Garreffa, Charles E. Fuller, Bavard H. Lalande Jr. and Donald G. Schultz.

Throughout this period, these representatives demonstrated initiative, eagerness and professional competence in supporting this organization's test program. This support was a vital contribution to the accomplishment of the USAEPG mission.

I would like to express my sincere appreciation to your personnel for their outstanding performance and cooperation while here with USAEPG.

(signed) J. H. PHILLIPS
COL., Armor
Chief, Materiel Test Division

★ News Briefs ★

Apollo/Soyuz Marks End of Era

Successful landing of the Apollo command module used in recent Apollo/Soyuz Test Program marked the end of an era at Ventura Division. Starting in 1961 and continuing through the final landing, all U.S. astronauts were safely returned to earth via Ventura Division Earth Landing Systems.

Electro-Mechanical Division Delivers First SACE

The Electro-Mechanical Division delivered the first SACE — Shorebased Acceptance Checkout Equipment — to Lockheed Missiles & Space Company. SACE units will be used for factory and Navy site checkout of Trident I (C-4) missiles to insure flight reliability.

PPD Receives F-16 Gyro Contract

Precision Products Department (PPD) was awarded a contract from General Dynamics for pre-production units for development and manufacture of rate gyros for USAF's F-16 air combat fighter. PPD's GR-G5 gyroscope will be used in a quadruple redundant flight system to provide outputs to the F-16 autopilot.

Marine Corps to Replace F-4 Aircraft with F-18

The United States Marine Corps has announced its 12 fighter attack squadrons will remain an all F-4 force until their replacement by the McDonnell Douglas/Northrop F-18. General Louis H. Wilson, commandant of the Marine Corps, made the announcement Aug. 1. Originally, four of the Marine Corps squadrons were to receive the F-14 Tomcat. F-18 deliveries are expected to begin in the early 1980s.

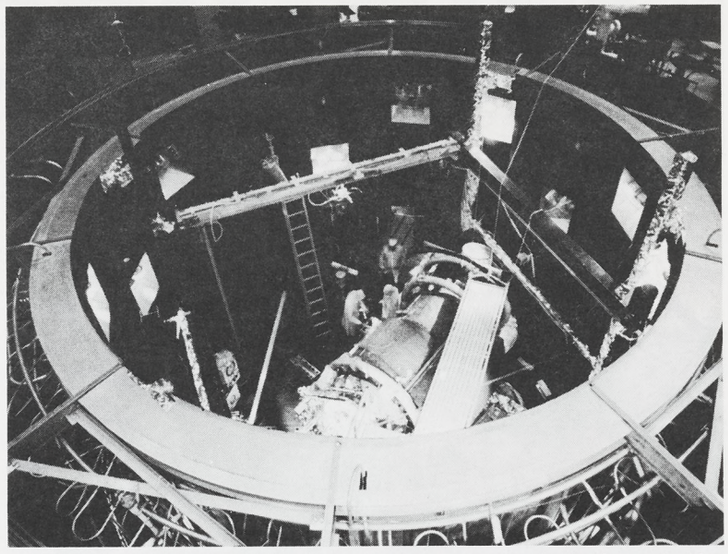
Electronics Division Wins AIDATS Contract

The Electronics Division won a $3.5 million contract for production engineering of the U.S. Army In-Flight Data Transmission System (AIDATS). Under the 15-month contract, Northrop will repackage the AIDATS equipment into a smaller volume and weight, requiring less power than the system tested.

Ventura Division Credit Union Presented Award

A Thrift Honor Award has been presented to the Ventura Division's Credit Union by the National Credit Union Administration. The organization attained a monthly growth rate of 2.09 per cent in accounts under $20,000 which is above average for federal credit unions of a similar size.

LANGSTON GILLUM, EEO coordinator for Northrop Services, Inc., Houston, left, presents a $1000 check to Dr. Alvin I. Thomas, president, Prairie View A&M University. Contribution was made by Northrop for the University's student scholarship fund. The check was accompanied by a letter from Dr. D. A. Hicks, Northrop senior vice president, Technical, which said, "We are aware of the financial problems that many students have and the importance of a scholarship program to help those with a need for financial assistance."



TECHNICIANS AT JOHNSON Space Center prepare the Apollo/Soyuz docking module for tests in the Space Environmental Simulation Laboratory. Northrop Services, Inc. maintains the laboratory for NASA. Such tests as these, simulating outer space conditions, helped insure the success of the recent Apollo/Soyuz mission. Northrop has supported every NASA manned space program since Project Mercury.

WINNING PILOTS AND maintenance crew of VA-304 are shown with one of the airplanes used in the Derby Nine bombing competition. Lt. Commander Ashworth is fifth from left, back row. This is the fourth such award VA-304 has won.

ASHWORTH'S SQUADRON

Four-Time Winner in Meet

Dave Ashworth is a senior research analyst in the Systems Analysis Department, Aircraft Division, during the week working at Northrop. But on weekends, he is known as Lt. Commander Ashworth, a Naval Reserve attack pilot who flies A-7A Corsair fighter bombers.

He recently participated with his squadron, Attack Squadron Three Zero Four (VA-304) in a semi-annual weapons delivery competition open to all reserve and fleet light attack squadrons on the west coast.

During the three days of competition at the Naval Air Station, Fallon, Nev., and Naval Weapons Center, China Lake, Calif., the pilots of VA-304 fired 20mm projectiles and dropped practice bombs in dive, level laydown and medium angle loft maneuvers. VA-304 came up with the highest cumulative score of all the A-4 and A-7A/B squadrons competing.

Ashworth's squadron received a citation along with the Silver Bomb Award. The citation stated that VA-304 " . . . may proudly be regarded as the best bombing and strafing A-4, A-7A/B squadron in the United States Navy . . . "

This is the fourth such award VA-304 has won since it was invited to compete five Bombing Derbies ago.

News of Northrop People Here and There

Northrop Board of Directors Elects Richard W. Millar Company Chairman

Richard W. Millar has been elected chairman of the board of directors of Northrop.

Millar, who has an extensive background in aerospace and in finance and investment banking, has been a director of Northrop since 1946. He previously served as chairman from 1947 to 1949.

Millar has been acting chairman since Thomas V. Jones, president and chief executive officer, resigned as chairman of the board on July 16.

Earlier in his career, Millar served for 10 years as a director of the Douglas Aircraft Company. From 1938 to 1942 he was president of the then-Vultee Aircraft, Inc.

After serving in the Army during World War I, Millar joined a New York securities and investment banking firm, and later became president of Bankamerica Company, the investment banking affiliate of the Bank of America.

In 1932 Millar entered reorganization work, participating in the reorganization of the Rio Grande Oil Co., Richfield Oil Co., and of Universal Pictures.

Prior to his election as chairman of Northrop in 1975, Millar was a consultant to the investment banking firm of Kuhn Loeb & Co.

• **F. J. MANZELLA** has been appointed president of Page Communications Engineers, Inc. Manzella has been with Northrop since 1968 and for the past two years has been president, Page-Iran, where he made a major management contribution to the completion of the Iranian National Telecommunications System program. **K. F. McCREADY,** general manager, Page-Iran, will report to Manzella. For the past seven months, **ROSS F. MILLER** has been acting in the capacity of president of Page Communications Engineers, Inc., as well as performing as group vice president, Communications and Electronics.

F. J. Manzella

• **WALTER FELLERS,** chief designer for the Aircraft Division, has been awarded the distinguished American Institute of Aeronautics and Astronautics (AIAA) Aircraft Design Award for 1975.

Walter Fellers

The citation for Feller's award stated "for outstanding achievement over the past 30 years in the design and development of fighter aircraft to meet the rapidly shifting and expanding requirements of diverse military environments."

• **W. E. WOOLWINE,** division general manager; **ORVILLE KYLER,** Mark-30 Program manager; **D. B. MAHER,** NT-37C Program manager; and **J. M. SNYDER JR.,** Marine Systems Marketing manager at the Ventura Division, recently attended the command change and retirement ceremonies for **CAPTAIN JACK CARTER,** Naval Torpedo Station, Keyport, Wash.

• **WILFORD WONG AND GORDON HALL,** Aircraft Division, will present a paper entitled "Suppression of Strong Shock/-Boundary Layer Interaction in Supersonic Inlets by Boundary Layer Blowing", at the AIAA/SAE 11th Propulsion Conference, Sept. 29-Oct. 1, to be held at the Royal Inn, Anaheim.

• **RALPH E. WALKER** has been appointed division general manager of Northrop Worldwide Aircraft Services, Inc., at Vance AFB, Okla. Walker replaces **SIDNEY O. BOGUE,** deceased.

• **GEORGE SALEM** was appointed director, Marketing Communications, Aircraft Division. He will plan and direct communications programs in support of division objectives and marketing activities.

• **TOM BEAZLEY,** Northrop Services, Inc. (NSI), Houston, Tex., was selected to represent Northrop at a Manned Spaceflight Awareness Program held at Cape Kennedy during the July 15 Apollo/Soyuz launch. Beazley was chosen for the honor because "he was the most instrumental and visible NSI individual associated with the highly successful Dynamic Docking Test System development required to support the Apollo/Soyuz Test Project."

• **RUSSELL WEAVER,** Electronics Division, is scheduled to present a paper entitled "Systems Approach to Practical Navigation" at the NATO/AGARD Technical Meeting of the Avionics Panel in Sandefjord, Norway, Sept. 8-12.

• **R. M. "DICK" SHAVE,** Electro-Mechanical Division, has been elected president of the Northrop Credit Union board of directors, replacing **W. H. WAYSMAN** who has resigned from the company. **JOHN J. RICHARDSON,** Industrial Relations, corporate office, replaces Shave as vice president of the board of directors and **FRANK FORVE,** Legal, corporate office, was elected to the board.

• **J. M. SNYDER JR.,** Marine Systems Marketing manager, and **E. V. CRABB,** Marketing representative, Ventura Division, recently attended the change-in-command ceremonies at the Naval Electronics Laboratory, San Diego, where **CAPTAIN R. R. GAVAZZI** assumed command.

• **JOE MARTIN,** Metal and Bonding Operation, Aircraft Division, was honored by the Long Beach Area Council of the Boy Scouts of America in a letter of appreciation received by Martin's supervisor, **A. I. PRESCOTT.**

• **H. W. "WOODY" SHERWOOD,** was appointed director, Quality Management Section, Avionics Department, Electronics Division.

• **C. L. ALMICH** has been appointed manager of Product Support at the Electro-Mechanical Division, replacing **NORTON KINDER.** Kinder transferred to the Aircraft Division as manager of Graphics Operations, taking over these duties from **JOHN BELLEVUE,** who is retiring at the end of this month. Almich will be responsible for Technical Publications and Training, Field Engineering, Graphic Arts and Reproduction and Photo Services.

• **P. J. EVERTS** has been named coordinator for Civic Affairs, corporate office, reporting to the assistant to the president, Community Affairs. She will also report to the executive assistant to the president in support of social and community matters in which the president is directly involved.

• **DON L. MARGERUM,** Electronics manager in the Tactical Expendable Drone System, Ventura Division, captured second place in the Cabrillo Flight of the Coronado-15 Sailboat National Championships at Huntington Lake. A broken pintle which affected the rudder and steering of his boat in the last race kept him from winning.

• Within the Electronics Division's MX Programs Department, headed by **GEORGE FRITZEL,** the following appointments were made: **HERB STARK,** deputy manager and **JOHN REYNOLDS,** business development manager.

• **RIPDAMAN MANN,** Aircraft Division Loads and Fatigues section, recently became a citizen of the United States. Mann first came to this country from India in 1967.

• **JACK LYONS,** Motion Pictures Services, Aircraft Division, was honored by the Westchester Players of the Westchester Playhouse for producing the best play during the past community theater season.

Help Sought in Locating People

The General Accounting Department, Aircraft Division, seeks the help of Northrop employees in locating persons who were formerly employed by the division and may be entitled to unclaimed property.

Employees who know any of the people listed below are asked to contact the department at 970-3881 or ext. 3881.

Names of persons being sought:

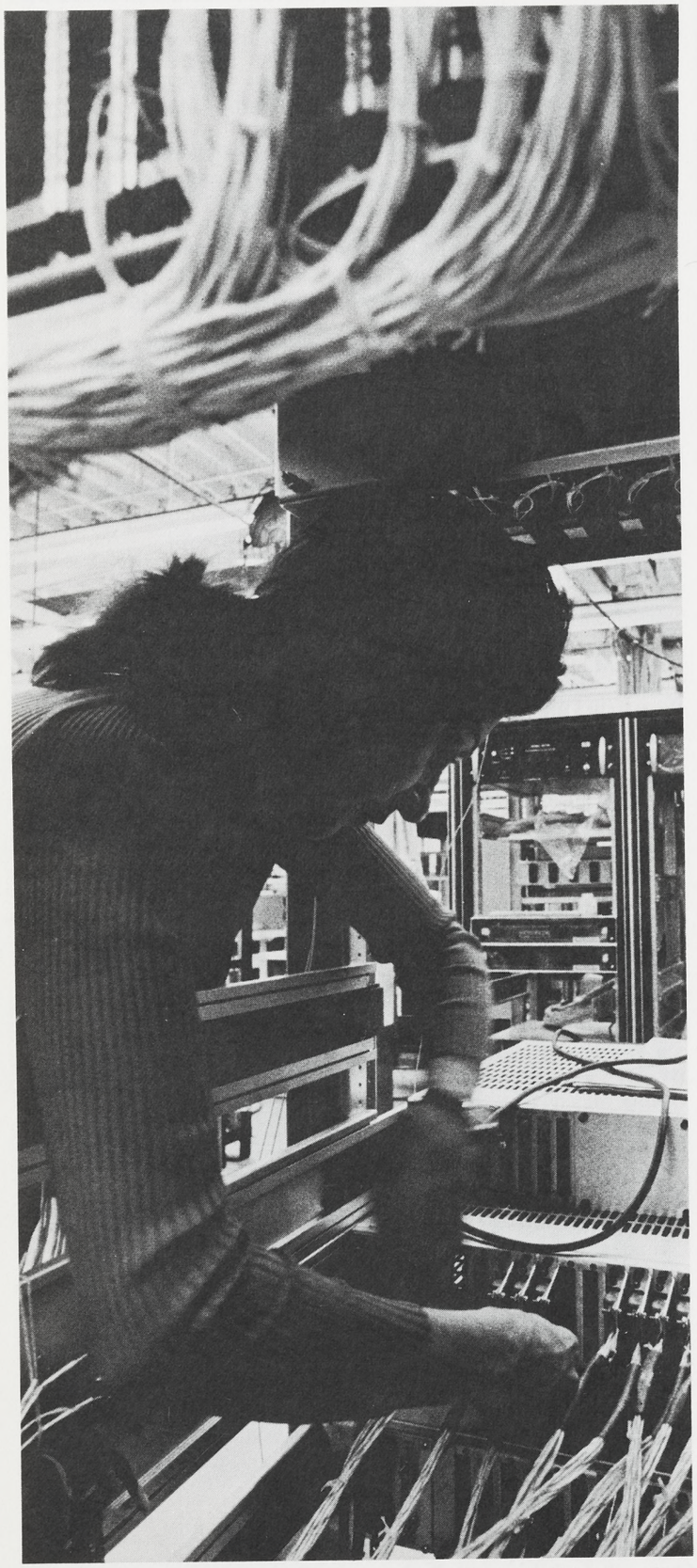
S. Avalos, O. L. Beck, M. E. Carolan, A. A. Casillas Jr., F. A. Chavez, T. L. Coleman, H. R. Cotton, W. J. Edmunds, J. K. Ford, A. J. Garcia, N. E. Garlock, E. L. Gerstbauer, A. Gilliam, R. E. Greene.

Also, A. P. Hall, M. A. Hayman, C. W. Hays, L. Huffer, R. J. Ironmaker, O. Jaramillo, J. C. Jensen, C. E. Johnson, L. C. Johnson, R. B. Kirbach, L. N. Knell, K. Lewis, J. E. Machado, J. A. Mason, J. M. Miller Jr., R. E. Moreau, G. E. Pinegar.

J. T. Polzer, J. E. Reese, J. J. Roberts, S. A. Root, C. L. Rosier, J. M. Ryan, M. Sosa, N. N. Soucy Jr., R. H. Spears, C. H. Washburn, D. R. Wheeler and H. C. Zimmerle.

Care and Patience Build Reliability

THE U.S. NAVY's TRIDENT submarine program will be a keystone in the nation's defense for the next generation. In a program of its vital importance, reliability is an absolute necessity. And Northrop's Electro-Mechanical Division has a part in helping insure that reliability. The division is building for TRIDENT, under a Lockheed subcontract, Shorebased Acceptance Checkout Equipment (SACE), which will be used for factory and Navy site checkout of TRIDENT I (C-4) mis-

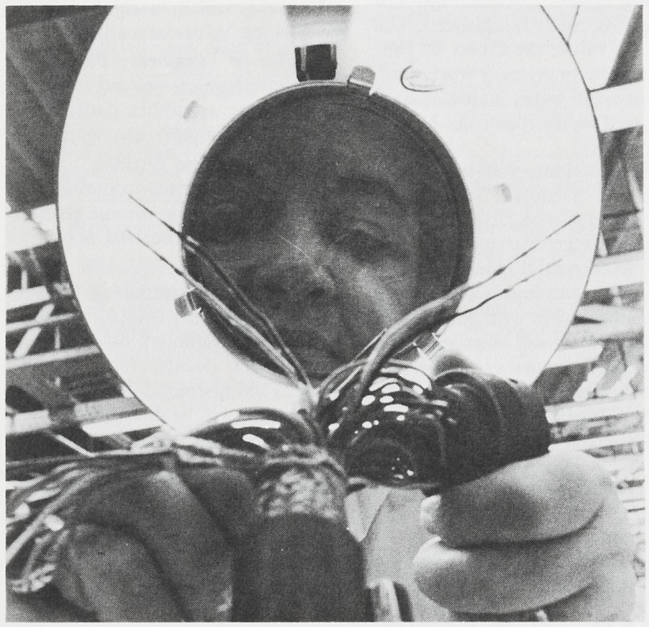


TWO HUNDRED thousand connections must be made in the SACE system. Gerry Garcia installs one of the many cable harnesses in a console frame.

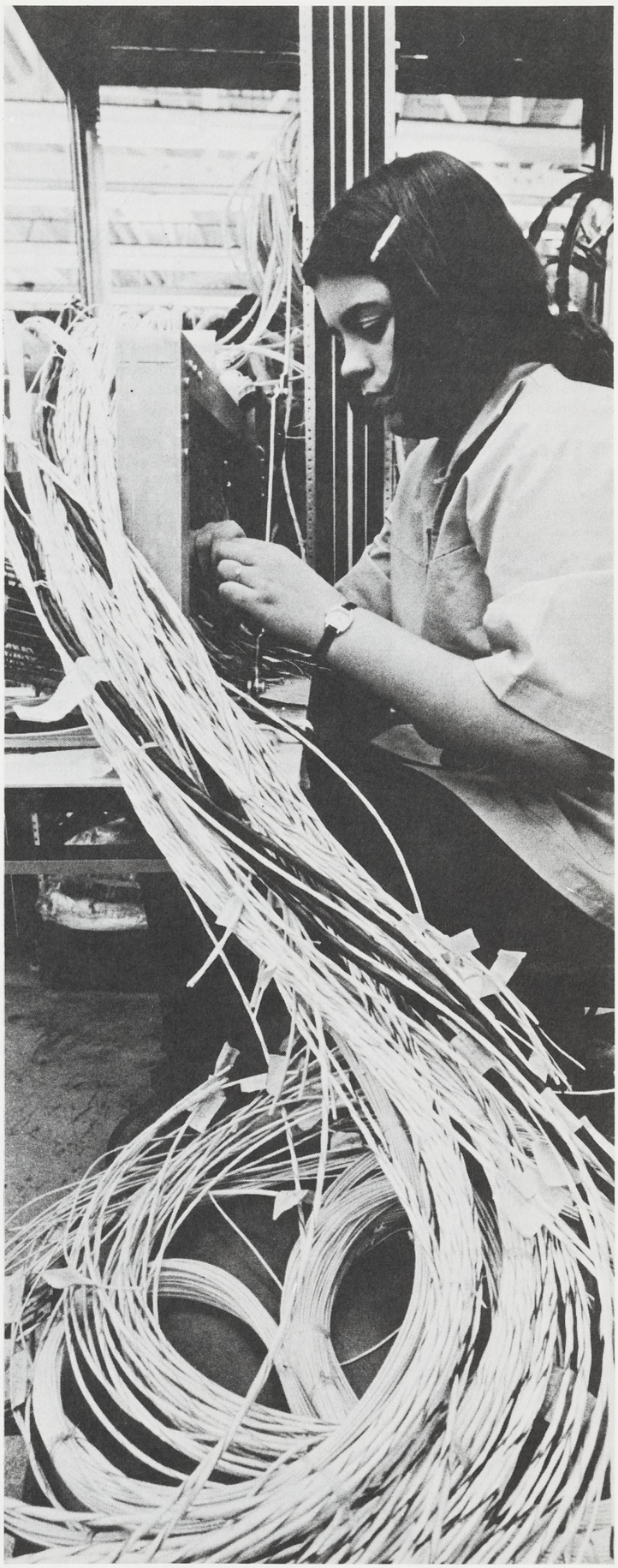
SOLDERING VOLTAGE grounds is a painstaking job for Freda Tracy, above. Below, Margaret Gierke assembles a cable while in the background other members of the assembly team work on other components.

ility into SACE

siles to insure flight reliability. The SACE missile checkout system is in addition to MTRE — Missile Test and Readiness Equipment — which Northrop has previously built for the Polaris and Poseidon submarine programs. MTRE is presently being modified for TRIDENT I (C-4) missile testing on the TRIDENT submarines. Ralph C. Dix, vice president for Program Management, is in charge of SACE operations. (Photos by Bob Thornton)



MAGNIFYING GLASS and ring light permit delicate cable assembly, above; while Gerry Garcia and Paulette Moser, below, weave intricate looms of cables into place in the console of the first SACE unit built.



HUNDREDS OF MILES of wires and cables go into each SACE console and each must be carefully attached, as Patricia Jennings is doing here.

Implementation of New Parking System

Early in 1974, the Aircraft Division Council recognized the need for a more effective parking control system. Since that time, considerable effort has been expended in establishing requirements for, and the implementing of a new parking system.

In establishing the requirements, consideration was given to the problem of growing population, parking density, mobility of work force, parking discipline, butt work shifts, and government regulations related to conservation and the need for car and bus pools.

The program concept was developed considering these factors and was approved by the Aircraft Division Executive Council.

The system will provide designated parking areas for all employees as well as for nonresident and visiting personnel. The formula for assignment of parking gives consideration to seniority and job classification as well as relation of lot location to job location (area) and provides preferential parking for carpools. It eliminates most of the currently assigned stalls in favor of scramble parking in specified lots and improves security for personal vehicles.

Hawthorne Interfacility Bus

The continuing emphasis being placed on the Federal Energy Conservation Program and the spiralling cost of gasoline have caused the division to review the transportation services being provided within and between the complexes of the Hawthorne facility.

Interfacility travel at Hawthorne will be provided by bus service. Buses will be available at approximately five-minute intervals between the hours of 6:30 a.m. and 5 p.m. Bus routes will remain as currently programmed and revised schedules and bus stop locations will be posted throughout the division.

Liaison Travel and Broadway Street Parking

Effective Monday, Sept. 8, liaison travel by private vehicles within the Hawthorne complex will be discontinued and in-plant roadways will be used only for access and egress to assigned parking areas. The north side of Broadway is designated for two-hour street parking.

Carpool Parking

Preferential carpool parking lot assignments will be provided only to those employees who have registered their carpool with Commuter Services. Carpool participants who have not yet registered must complete a "Parking Request — Pool Passenger Registration" (Form #68-297) and return it to Commuter Services. Carpool registration after program start will be subject to a two to three week delay in receiving preferential parking assignments.

Forms may be requested by contacting Commuter Services at ext. 4495.

How Parking Is Assigned

An index value calculated from employee job code factor and number of continuous years of employment with the corporation is used as a ranking system for assignment of parking for each employee. The higher the value, the closer an employee will be to primary work area. An equivalent index value system will be used for resident non-Northrop personnel.

Medical parking will be authorized by the Medical Department. Carpool groups who have registered with Commuter Services will be granted preferential parking when two or more employees participate per car. Employees with 30 or more years of seniority will be provided an assigned parking space.

Authorized Parking Area Identification

Executive Parking: Gold stripe on ground at parking stall entrance indicates parking for Northrop job code 69/19 and above and customer senior representatives.

Assigned Parking: Blue stripe on ground at parking stall entrance, a number and the word "assigned" indicates assigned parking for employees with 30 years seniority, secretaries reporting to members of the Aircraft Division Executive Council and corporate officers, and authorized employees with Medical disabilities.

Motorcycle, Bicycle Parking

Parking authorized in specific posted areas only.

Carpool Parking

Carpools will be assigned scramble parking in preferred lots.

Visitor or Temporary Parking

Green stripe on ground indicates limited time scramble parking for visitors on company business.

Employee Parking

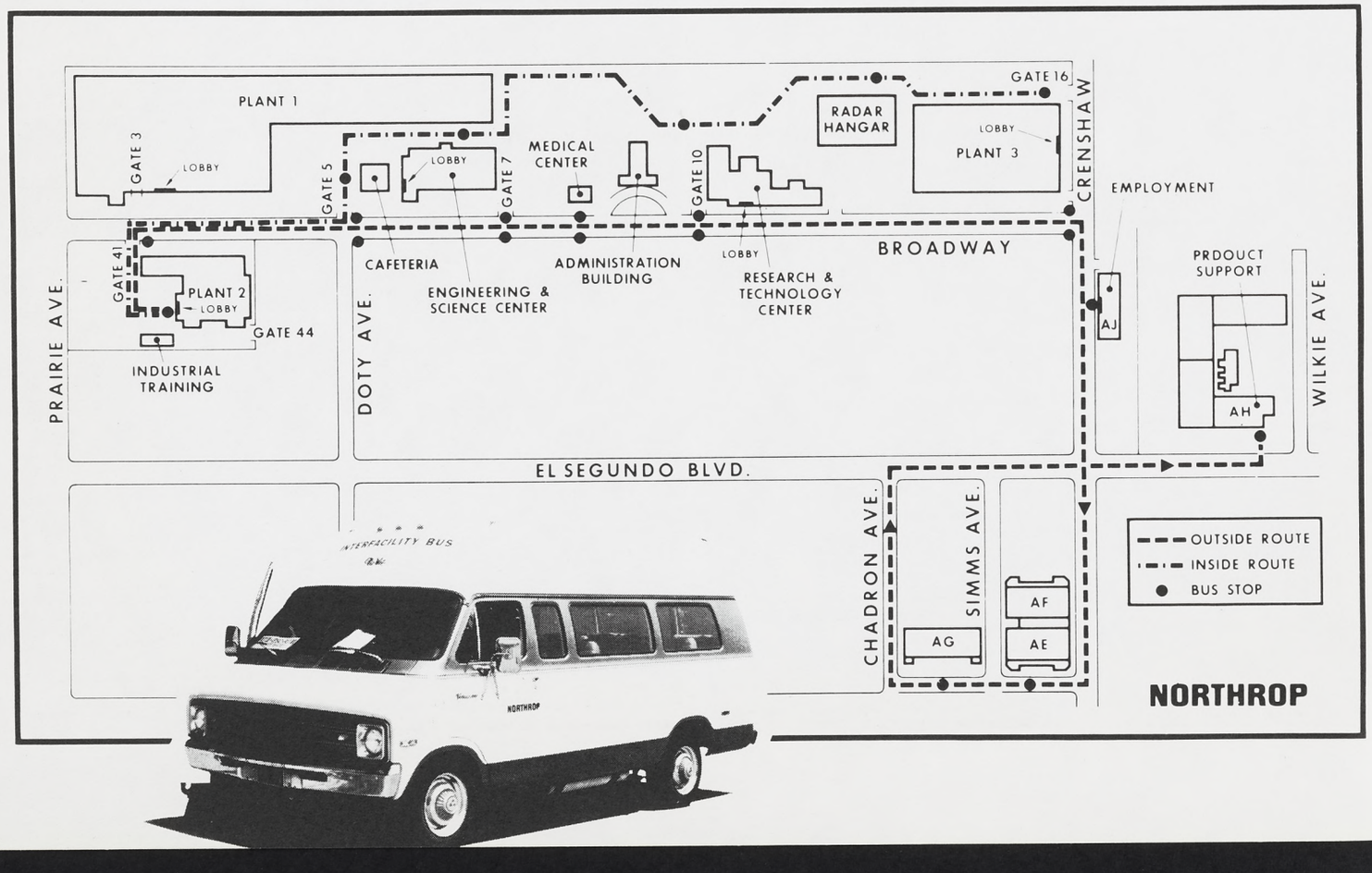
No color stripe on ground at stall entrance indicates scramble parking for employees authorized access to parking area.

Final Implementation of Plan

Prior to system implementation, parking lot assignment notifications, car bumper decals, maps of the newly renumbered lots and final instructions will be distributed.

Everyone's continued cooperation is necessary and appreciated in the final implementation of the Parking Administration Security Access System which was developed for your benefit and the safety of your property.

INTERFACILITY BUS ROUTES



Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Motorcycle, 1973 Yamaha, 650cc, 8500 mi., $950. 213-425-6228.

Pontiac, 1965 Catalina sta. wagon, $400. 213-541-1568.

Motorcycle, 1946 Harley Davidson 45, 750cc, reblt. eng., $1650. 213-894-2711.

Ford, 1973 Thunderbird, $3995. 213-274-8051, 213-776-6308.

Motorcycle, 1974 550 Honda, extras, $1550. 213-670-0060.

Motorcycle, 1973 Honda CL, 450cc, 3000 mi., $800. 213-538-2256.

Ford, 1970 sta. wagon, $1095. 213-325-0116.

Olds 98, 1967 sedan, $500; Ford, 1972 1-ton Super Camper Special, 11½' Amerigo, sleeps 6, fully self-contained, $6300. 714-528-1180.

Ford, 1974 Courier, r/h, 4-spd., 5000 mi., still on warranty, $2990 or $300 & take over pymts. 714-554-4190.

Motorcycle, 1974 Suzuki 250 GT, less than 5 mos. old & less than 1200 mi., $750. 714-633-6953.

Motorcycle, 1972 TS185 Suzuki, 175cc factory MX kit, many extras, $550. 213-860-1680.

Pickup, 1956 Chevrolet, 348, 4-spd., $600. 213-329-0527.

Motorcycle, 1974 Yamaha RD 350, 7500 mi., $800. 213-370-5970.

Motorcycle, 1972 Triumph TR100, 500cc, dual carbs., 5600 orig. mi., $950. 213-644-6433.

Ford, 1974 van camper, bubble top, AM-FM stereo/8 track, auto., a/c, p/s, 15,000 mi., $5300. 213-360-9625.

Ford, 1967 van camper w/pop top roof, a/c, completely self-contained, $2000. 714-524-6675.

Dodge, 1975 van, ½-ton, 10,000 mi., still under warranty, auto., V-8, 318 eng., p/s, p/b, extras, $4700. 213-534-4596.

Motorcycle, 3-whl., reblt. 5 h.p. motor, $95. 213-378-3845.

Datsun 240Z, 1972, mags, air, AM/FM stereo, new clutch, tires, shocks & bks., $4425. 213-644-3733.

T-Bird, 1957, p/s, skirts & both tops, $2995. 213-756-1812.

Husky, 1972 250 w.r. 5-spd., many extras, 10 hrs. on eng., $600. 213-545-6750.

Motorcycle, 1971 Yamaha 360 MX, $475. 213-327-3278.

Ford, 1971 Econoline, mag whls., 8-cyl., paneled, $2000. 213-397-6490.

Mazda, 1972 RX-2, all extras, $1500. 213-375-3378.

Buick, 1967 Skylark, 2-dr. h/top, auto. trans., a/c, p/s, 50,000 mi., $1195. 213-644-2175.

Motorcycle, Honda XR-75, $375. 213-832-3129.

Motorcycle, 1973 Honda MT 250, extras, $650. 213-541-3000.

Volkswagen, 1967 Fastback, radio, 2 new tires, $695. 213-378-2579.

Firebird, 1972 Esprit, p/s, p/b, a/c, $3100. 213-662-7741.

Motorcycle, 1974 Indian MX, 100cc, 5-spd., $325. 714-826-8998.

Motorcycles, 1969 Sachs, 100cc, $300; Honda Trail 90, $150; Capriola, $25. 213-329-4090.

Olds, 1971 Cutlass S, 2-dr., V-top, $1600. 213-994-9280.

Motorcycle, 1969 Yamaha, 250cc, many extras, $225. 213-675-7082.

Mercury, 1972 sta. wagon, wood side panels, $2500. 213-821-4635.

Motorcycle, 1970 Yamaha 250 Enduro, 4100 mi., Curnutt rear shocks, extras, $500. 714-842-5927.

Audi, 1971 wagon, $1495. 213-396-2396.

Ford, 1975 LTD, a/c, pwr., auto. trans., 17,000 mi., $4300. 213-365-7338.

Volkswagen, 1970 Fastback, recent paint & tune up, reblt. eng., $1500. 213-371-1726.

Olds, 1969 442, 4-spd., $1100. 213-299-5438.

Vehicles For Sale

Motorcycles, 1973 Honda 750, min. bid, $1500; 1974 Honda 750, min. bid, $1800; 1974 Norton 850 Commando, min. bid, $1800. Credit Union ext. 3010.

Chevrolet, 1973 Impala sta. wagon, 4-dr., 6-pass., r/h, a/c, p/s, p/b, auto. trans., V-8 eng., $2795; Buick, 1968 California G.S., 2-dr., r/h, a/c, p/s, V-8 eng., $795. 213-596-0316.

Maverick, 1974, 9500 mi., $3450. 213-567-9921.

Mustang, 1965, needs work, $450. 805-498-4443.

Mini-Motorhome, Dodge, 1973 4-Winds, 19'10", 360 eng., many extras, 19,000 mi., $8500. 213-326-3366.

Motorcycle, 1970 Harley Davidson Sportster, custom, $1700. 213-375-7303.

Miscellaneous For Sale

Tilting Arbor Table Saw, 7", ¾ h.p. motor, Craftsman, $95, other shop equip. 213-370-3482.

Laundry Tub, cast iron w/white porcelain, $5. 714-968-7987.

Lens, 250mm, f4.5 telephoto Lentar T mount w/adapter for Pentax, $45. 213-378-2965.

Truck Tires & rims, 5 6.70x15, ½-ton Ford, $50. 714-893-8981.

Washer, Frigidaire, white, lge. deluxe mod., $150; dryer, gas, Frigidaire, white, $150 or $250 set. 213-325-3404.

Bicycle, 26", 3-spd. Sears, $50. 213-346-3802.

Couch, 9', & love seat, Spanish Mediterranean, matching table, gold & black velvet, $150. 714-821-1077.

Desk & matching chair, walnut, $60; lamps, wrought iron chain, $10 ea.; vacuum cleaner, Singer upright, $7. 213-594-0542.

Sewing Machine, Necchi, port. cabinet, zig zag, all access., $65. 213-375-4747.

Travel Trailer, 21' Terry, 1967, tandem axle, self-contained, sleeps 6, $1300. 714-544-7349.

Surfboard, Dewey Weber, 9'7", $50. 805-942-8820.

Boats, 33' Tolly TSSF sdn. 220's, slip, wood/fibre, $17,000; cabin cruiser, 19', Johnson out/bd., $1600. 213-371-4341.

Bed, king size Beautyrest, box spring & mattress, $70. 213-675-8813.

Electronic Flash, Vivitar 292, w/P.C. cord, case, charger & wide angle attach., $65. 213-477-3876.

Seats, 2 black deluxe for '75 Dodge van, $25 ea. 213-675-6206.

Stove, Gaffers & Sattler, 1972, avocado, 30", $70. 213-671-5106.

Tape Deck, Teac 2340, 4-channel, reel-to-reel, stereo, never used, $775. 213-675-8278.

Water Heater, gas, 40 gal., never out of carton, $55. 213-373-5223.

Bed, king size, complete w/Mediterranean headbd., incl. set of linens, $100. 213-823-1061.

Sofa, 8' & love seat, blue w/gold leaf design, 2 yrs. old, $275. 213-630-4320.

Air Compressor, portable, ½ h.p. elec., 80 p.s.i., $60. 213-861-6404.

Bicycle, men's 5-spd. Huffy, 19" frame, 26" whls., $40. 213-645-3381.

Bedspread, king size, fur, dk. purple, pillow covers, $20. 213-374-6585.

Movie Camera, Bell & Howell 8 mm, zoom lens, case, $75. 213-532-4984.

Organ, Hammond, model CV, w/3 spkr. cabinets, $1400. 213-328-4583, 213-328-2820.

Clarinet, b flat,Conn, case $65; trumpet, Olds, case, $75. 805-526-0515.

Occasional Chair, turquoise, Swedish, modern, $15; shade, 24" tiffany, blue-green-amber, $20. 213-374-1659.

Speakers, 2 lge. SRL, never used, approx. 2' 4" hi. walnut, $300 pr. 213-370-8007.

Stove, Wedgewood Deluxe, gas, dble. broiler, griddle, near new, $175. 213-679-8380.

Bicycle, 22" Motobecane, Campanola gears, Reynolds 531 frame, $275. 213-882-2629.

Paddle Board, & wood, 12' long, $10. 213-677-7421.

Telephone Answering machine w/cassette recorder, Sanyo, $125; adding machine, 10-key. $50. 213-534-4596.

Guitar Amp., Fender Dual Showman, 110 w. rms., 2 15" D-130 J.B.L. spkrs., $700; speaker cabinet, solid state series, 3 Fender 12" spkrs., $150. 213-335-3940.

Tonneau Cover & carpet for 1974 Mazda pickup, $25. 213-374-2915.

Miscellaneous For Sale

C. B. Antennas, 2 6' top loaded, ¼-weave lgth., matching harness, 2 ball mounts & 2 quick releases, $45. 714-523-2556.

Coffee Pot, Corningware elec., $15; camera, Kodak Instamatic, $6; backpack, never used $10. 213-363-6996.

Living Room Set, 3-pc., maple, $35 or $15 ea. pc. 213-644-1768.

Pocket Camera, Keystone, self-contained electronic flash & close-up lens, $50. 213-423-3236.

Hair Dryer, complete w/vinyl chair, shop-type, $35; school desks, 2 child's old time, $35 ea. 213-941-1865.

Chest, 4-drwr., $75; lamps, 2, $15; baby bed, mattress & pad, $45. 213-863-3758.

Stole, azure mink, light grey, cleaned & glazed, $190. 213-697-6429.

Bicycle, Nishiki International 10-spd., 23" men's, 1 yr. old, $120. 213-970-3060.

Bicycle, 10-spd. Raleigh, fully equipped, $100. 213-371-5308.

Movie Camera, projector, reg. 8mm, $40. 714-828-2815.

Camera, Minolta SRT-101 w/Rikkor 58mm lens, 200-mm Rikkor tele-zoom lens, Vivitar 2x & Soligor 2x converters, $300. 714-776-8290.

Bowling Ball, $7. 213-376-4831.

Unicolor Slide Processing System, $15. 213-835-3869.

Bed, king size, linens, blanket, b/spread, frame, $150; chests, 4 & 8-drwr., walnut, matching corner desk & chair, $150. 213-532-2610.

Sailboat, 26' Seabird, 8 h.p. diesel, cruising gear, $3900; parachute, nylon, for sea anchor, $10; clarinet, b flat, Conn, $85. 213-320-8297.

School Desk, 75 yrs. old, 2 desks on 1 runner, $40. 714-685-5002.

Refrigerator, 14 cu. ft., $65; sofa & love chair, $75. 213-973-0933.

Intake Manifold, for 4-bbl. carb., Ford 390 eng., $25. 714-842-5968.

Pup, Dachshund red fem., 14 wks., AKC, shots, $100. 213-676-2347.

Boat, 1971 Glastron V156 w/85 h.p. Evinrude, convt. top, misc., $2495. 805-498-2307.

Organ, Hammond Piper autochord, near new, $650. 213-391-5046.

Couch, 10', avocado & gold, 4 cushions, $150; file cabinet, metal, 2 drwr., $30; check writer, $39. 213-671-8890.

Mandolin, Orlando, $50. 213-836-7447.

Organ, Conn, dble. keyboard, elec., walnut, $400. 213-438-4183.

Bicycle, English 10-spd., $25; play-pen, wood, $10; infant seat, $3. 213-679-0048.

Carpet, approx. 2000 sq. ft., blue shag, $890. 714-536-9929.

Console Piano, Baldwin Acrosonic, solid mahogany, $500. 213-644-1581.

Tires, 5 mud/snow & whls., L78-15 Armstrong Norseman, ⅜ tread, $125. 213-377-5059.

Backpack, Kelty Serzc, used twice, $75. 213-375-3790.

Doghouse, 31" x 18", $10; box fan, 3-spd. KoldAire, $12; bed frame, metal, sgl., $10. 213-675-6020.

Sofa, 8', $225; recliner, both naugahyde, $150. 714-968-8388.

Wedding Band, ladies white gold, 3 rows of diamonds, $250. 213-672-8813.

Wanted To Buy

Transportation Car, good running, any body condition, must have fair tires, will consider cars selling under $200 only. 714-828-9139.

Airplane Engines, old ignition model, coil, points, plug. 213-676-9748.

Desk for adult w/chair, if possible. 213-370-0359.

Stepping Stones, all sizes, colors & broken concrete pieces. 213-372-5508.

Parts for 1940 Ford. 213-597-5232.

C.B. Transceiver, used, mobile, reasonable; Volkswagen, older & running, max. $300. 714-847-3120.

Square Dance Outfit, dress/or blouse, skirt combo. Reasonable, good condition, woman's size 8 or 10. 714-528-1416.

Oscilloscope, DC - 10Mhz, wide band, triggered, Heath IO-103 or equiv. 714-544-7349.

Outboard Motor, late model 100 to 115 h.p. 213-323-4257.

Want a Hole-in-One? Try Dirty Golf Balls

It's not difficult to score a hole-in-one — that elusive goal of golfdom's divot diggers. You just find the right ball.

At least that is what Electro-Mechanical Division's (EMD) Bill Temple claims and he has his own hole-in-one to prove it. Playing in a Northrop foursome at Alta Vista Golf Course, he found a ball in the rough. It was discolored, faded and dirty. It had been lost for a long time.

"My companions, Bert Portier, Lee Gough and Paul Kahler hooted when I started to play the ball," Bill said. "They asked if I wasn't going to clean it off. I told them that the dirt would bring me luck. I intended to 'run the hole'."

And he took a hefty swing with a number five wood. The lost ball soared up and found itself right in the cup of the 17th hole.

Now he has half of EMD's extensive golfing fraternity out looking for lost balls.

Holiday Coming

All Northrop facilities will be closed Monday, Sept. 1 in observance of Labor Day. Work shifts will resume Tuesday, Sept. 2.

Wanted To Buy

Piano, any condition. 714-956-7838.

For Sale or Trade

Motorcycle, 1970 Moto-Guzzi 750, $1250 or trade for Mustang or Corvette, equal condition. 213-762-0361.

Rentals Wanted

Want room to rent or share apt. 213-762-0361.

Lost and Found

Fraternity Emblem Pin, gold, dia.-shaped w/white & red stones around emblem. Of great sentimental value. Around, or near Plant One/Tooling Bldg. area or parking lot 12. $30 reward! 213-324-1933.

Personals

To our many friends & co-workers, we wish to thank all of you for the flowers & cards we received when we lost our father, W. A. Davison. WALT DAVISON & AUDREY WOLFE.

I want to thank my Northrop co-workers & friends for the many prayers, gifts & cards sent to me during my illness. 'MICKEY' ST. MARTIN.

In memory of Robert J. Weeks, we wish to thank the many Northrop co-workers for the thoughtful kindness & generous memorials to the Heart Fund, St. Joseph's Indian School & the constant care ward at St. Francis Hospital. MRS. NADINE WEEKS.

I wish to thank my friends at Northrop for the flowers, kindness & thoughtfulness expressed during the loss of my father. BESSIE CAMPBELL.

I want to express my deepest appreciation for the expressions of sympathy, cards, flowers & remembrances sent to me on the death of my mother, Helena Jones. ESTHER JONES.

To all the good people who made the occasion of my retirement such a delightful experience, my sincere thanks. Your warmth & generosity are appreciated more than I can say. TED GARVEY.

Free

Pups, to good home, mixed breed, some shepherd or husky. 213-530-1325.

Kittens, 2. 213-675-7547.

Ride Wanted, Offered

Need, ride home, 4:42 p.m. 14th St. between Prospect & Pacific Coast Hwy., Aircraft Div. ext. 3010. 213-372-9908.

PIE EATERS DELIGHT in summer festivities at picnic held by Electronics Division's Northrop Dakota employees at New Town, N.D.

Radio Club Has 'Field Day'

For members of the NRC Radio Club, it was the "real thing" when they participated in the recent annual field day sponsored by the American Radio Relay League.

Bob Cobb, Electronics Division, club commissioner, reported the club enjoyed a record outing at the exercise held on the Palos Verdes Peninsula. "We set a new record for total stations contacted with 1552," he said.

The field day is a test of disaster and emergency equipment that is participated in by hundreds of radio clubs and thousands of individual radio amateurs throughout the U.S. and Canada. The test lasted 27 hours during which time entrants attempted to contact and exchange messages with as many other ham stations as possible.

The NRC hams set up four separate transmitting stations: one for single sideband voice, one for Morse code, one for VHF and one for beginner novices.

Participating from the Electronics Division were: Bob Cobb, Glen Gardner, Ted Ito, Lambert Ligtenberg, Horst Rick, and Bill Webster.

Service Awards Presented

Donald Schultz, Hybrid Process and Test unit, Palos Verdes, Richard Williams, Customer Service unit, and William La Tendresse, Electrical Purchasing unit, Hawthorne, observed their 25th anniversaries this month to highlight service awards for August.

Donald Schultz

Others observing August service awards are: 20 years — Johnnie Smith and Varney Bancroft, Hawthorne, and Barbara Pendergrass, Palos Verdes; 15 years — Clifford Pease and Buelah Garrett, Palos Verdes, and Richard Teel, Charlene Schroeder and Roger Stolze, Hawthorne;

10 years — James Drevick and Donna Wood, Palos Verdes; and Kenneth Hauersley, Hawthorne; 5 years — John Bloodworth and George Keen, Hawthorne; Chris Saunders, Palos Verdes; Stewart McKenney, Washington, D.C. office; and Gary Brines, BSL - Hayward.

NRC Calendar

NRC bowling league is taking signups now to reserve a place in a Northrop league for yourself and family or friends. Entry forms are available at all NRC offices and from league officers or bowling commissioners.

Leagues start to roll in September. Schedule of the season is as follows:

On Sept. 8, 6:15 p.m., Tropicana, 765 mixed 5 handicap and Bowl-O-Drome, 740 mixed 5 handicap; Sept. 9, 6:15 p.m., Bowl-O-Drome, 880 men's scratch; Sept. 10, 6 p.m., Tropicana, 740 mixed 5 handicap and 6:15 p.m., Missile, 775 mixed 5 handicap; Sept. 16, 6:15 p.m., Southwest, 780 mixed 5 handicap; Sept. 23, 10 a.m., South Bay, 575 mixed 4 handicap; and Oct. 17, 1:30 a.m., Pro 300, 740 mixed 5 handicap.

Commissioners from the Aircraft Division are Rosalie Smith, ext. 5203 and Bob Moyer, ext. 3069. League officers are Paul Montiecue, second shift, ext. 3123; Darlene Klasse, ext. 4816; Joe Aragon, ext. 4493; and Dave Ritchey, second shift, ext. 2573. Electronics Division commissioner is Dorothy Baldwin, Hawthorne ext. 2213.

* * *

There have been several inquiries about forming a winter bowling league in the southern area (So. Bay Bowling Alley, Gable House, Bowl-O-Drome, Palos Verdes Bowl). If enough interest is displayed, this may be accomplished.

Anyone interested in bowling in this area in the winter league, please contact Marian Owens, Palos Verdes, ext. 415 or 572. Please respond promptly as requests to bowling alleys must be put in early.

* * *

The NRC Camera Club meets the second Tuesday of each month and schedules field trips and dark room work sessions. Interested camera buffs should contact Commissioner Jeanne Saxon, Hawthorne ext. 2542.

Blood Drive Set For Next Month

The summer blood drive is scheduled for Palos Verdes Monday, Sept. 15, and at the Hawthorne facility on Thursday, Sept. 18, Arnah Pakes, Medical, reported.

The only blood drive of the year at Palos Verdes will take place from 9 a.m. - 1:30 p.m. in the lobby of Building 2. The Sept. 18 drive at the Hawthorne facility is next to the cafeteria.

The Red Cross points out that in summer and early fall, with many people away and vacationing, blood is scarce and "every pint becomes precious."

Pledge system cards will be issued with paychecks two weeks before each drive, Ms. Pakes said.

BRAZILIAN AIR FORCE officer, Colonel O. S. Stenio, right, talks with A. B. 'Burney' Lipscomb, vice president and manager, Avionics Department, on first visit to Electronics Division. Brazilian officer received briefing on Omega navigation system and other Electronics Division programs, as well as reviewing test procedures for circuit cards used in distribution boxes produced for the Brazilian version of the F-5E. Colonel Stenio is chief of the Brazilian F-5E office at the Aircraft Division.

USAF F-15 EAGLE AIR SUPERIORITY FIGHTER — portrait by Charles Healy, Defense Systems Dept.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

Published monthly by Northrop Corporation, Los Angeles, California Vol. 33, No. 9 September 1975

Division Group Earns Honors

Some 16 Electronics Division employees have been honored for their work in helping motivate youth in the Los Angeles area to continue their education and strive towards meaningful jobs in industry.

As members of the Youth Motivation Task Force (YMTF), these volunteers have visited junior high schools in minority or disadvantaged areas during the 1974-75 school year. Their message has been the importance of education and the need to remain in school.

Division volunteers receiving Certificates of Appreciation were: Leatrice Benton, Pat Carr, Peter Casey, Gene Choy, Jesse Ingram, Joe Luckey, Alex Martinez. Carl McCall, Rita Ramirez, Pamela Roehrig, Ed Subia, Lucy Tamariz, Betty Tung, Patricia Walker-Shaw, Burt Witz and Pat Partida.

Defense Systems Department Gains Major F-15 ICS Production Contract

The Electronics Division's Defense Systems Department (DSD) has received a $25 million contract from the U.S. Air Force for initial production of internal countermeasures sets (ICS) for the USAF's F-15 air superiority fighter.

The award is a major acquisition for the division with estimated total potential value of the program at more than $100 million.

David N. Ferguson, corporate vice president and division general manager, summarized the contract award significance as follows:

"The Defense Systems Department, headed by Wally Solberg, is to be congratulated for obtaining this most significant production contract. The F-15 ICS is state-of-the-art hardware and is the result of four years of intensive R&D effort at the Rolling Meadows, Ill., facility.

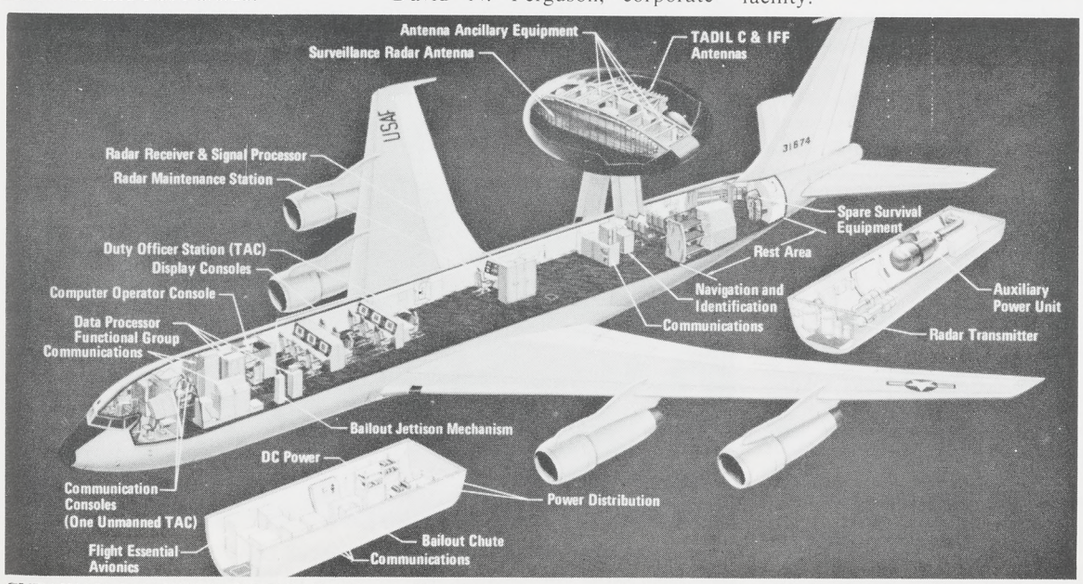
"This program is of special significance since it serves as the fundamental technical base from which other systems are being derived. The successful R&D program was led by Vince Battaglia and George Fritzel."

Production of the AN/ALQ-135 (V) ICS will begin immediately, said W. C. Solberg, vice president and manager, DSD. Currently staffed at a level of 800 personnel, the DSD organization is scheduled to expand about 50 per cent over the next three years to a total of over 1200 people, Solberg said.

"As the programs which are currently in the development phase mature into the production phase, it is anticipated that the staffing growth will continue for several years thereafter," Solberg added.

The $25 million award, from the Aeronautical Systems Division, Air Force Systems Command, calls for production of 44 AN/ALQ-135 internal countermeasures sets for the F-15 aircraft assigned to USAF's Tactical Air Command, plus spares, data, and production start up costs. Deliveries of units to the Air Force will begin early in 1977.

The equipment provides jamming of radar signals as part of the aircraft's Tactical Electronic Warfare System, designed to enhance survivability and mission success of the F-15 in an enemy environment.



CUTAWAY DRAWING OF USAF Airborne Warning and Control System (AWACS) aircraft shows Northrop's integrated navigation system located aft of wing. The Avionics Department, which delivered its second system for pre-production aircraft, is under contract to Boeing for integration, production and testing of all AWACS navigation and guidance equipment.

★ News Briefs ★

DSD Earns F-15 ICS Production Contract

The Electronics Division's Defense Systems Department (DSD) has received a $25 million contract for initial production of internal countermeasures sets (ICS) for the USAF's F-15 air superiority fighter. David N. Ferguson, vice president and Electronics Division general manager, described the new contract as one of the most important awards ever received by the division. "We view electronic countermeasures as a major growth area of Northrop," Ferguson said. "Our work on the F-15 will provide us with a solid base from which to expand our overall efforts in the electronic warfare business."

Northrop Declares Quarterly Dividend

The Northrop board of directors declared a 40 cents per share quarterly dividend on Northrop common stock, payable Sept. 20 to shareholders of record Sept. 2. A quarterly dividend of 36¼ cents per share on Northrop $1.45 cumulative preferred stock will be made payable Oct. 4 to holders of preferred stock of record Sept. 19.

Swiss Cabinet Selects F-5E

The Swiss government has announced it has chosen the F-5E as its next front line fighter. The announcement culminated a two-year evaluation of the leading aircraft candidates around the world.

Shareholder's Suit Dismissed

A Northrop shareholder's derivative action suit against the company's former independent auditors filed in U.S. District Court, Central District of California, has been dismissed as a duplication of a previously settled shareholder's suit.

Northrop Services to Support Toxicology Lab

Northrop Services, Inc., will furnish technical support to the National Center for Toxicological Research at Jefferson, Ark. The contract will be worth an estimated $1,250,000 over the next three years. Main objective of the laboratory is to determine the adverse effects of low-dose, long-term exposure to chemical toxicants and poisons.

TEDS Testing to Begin Soon

Antenna pattern and radar cross section testing of a full-scale model of the Tactical Expendable Drone System (TEDS) will soon start at a desert site near Palmdale. Ventura Division engineers will be evaluating the performance of electronic subsystems which are part of TEDS flight hardware. Ventura Division is working under an Air Force contract for validation of TEDS concept which includes flight demonstrations and system of definition studies. TEDS concept involves deployment of large numbers of expendable drones in support of tactical forces.

Energy Use Continues to Drop at EMD

The energy conservation program at the Electro-Mechanical Division (EMD) has dropped the average kilowatt hours used per employee/month from 1504 in 1972 to 833 kwh during the first quarter of 1975. The division used 2021 kilowatt hours of electricity per average month in 1972 for 1343 occupants. The 1975 estimate, based upon first quarter usage, is for 1,750,000 kwh per month for 2100 occupants.

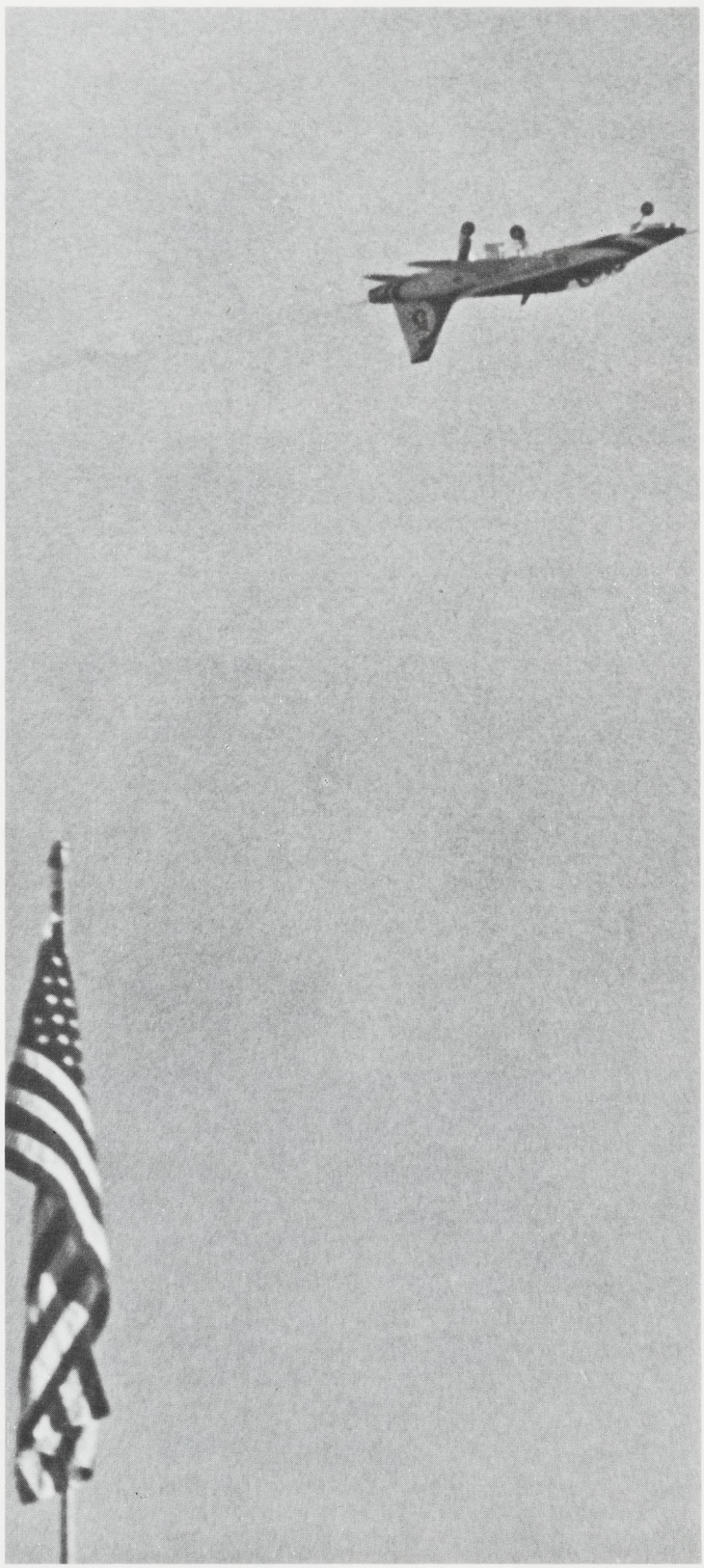
Ventura Division Completes NT-37C Launches

Ventura Division has successfully completed initial surface deck tube launches of the NT-37C torpedo at Dabob Bay Test Range, Keyport, Wash. Surface launching capability provides new dimension for use of the Northrop-modified torpedo. Various navies throughout the world have expressed interest in such deck tube launches.

PPD Receives Gyroscope Package Contract

Precision Products Department (PPD) has been awarded a contract for production of NIS-210 strapdown three-axis G-6 gyroscope packages for a re-entry vehicle. The rate gyro packages are a combination of technologies extracted from the MK-500, SATCOM and PPD-developed digital balanced electronics.

T-38 Shows Off to Crowd



ON SEPT. 7, AT Hamilton Air Force Base, Calif., the USAF Thunderbirds performed their 100th aerial demonstration since switching to the supersonic T-38. Combine the skill of the Thunderbirds and the easy handling characteristics of the T-38 and you get breathtaking maneuvers such as this one photographed. Thunderbirds have logged over 3300 flights on their nine T-38 Talons. (Photo by Henry Jimenez, Aircraft Division)

Northrop Newsmakers

• **DR. NIGEL PRIDMORE-BROWN** has been named manager of Advanced Design for the Ventura Division. In his new position, Dr. Pridmore-Brown is responsible to initiate and pursue new product developments for the Ventura Division. He formerly was manager, Aeronautics and Propulsion Research and Technology for the Aircraft Division.

• New units have been organized in the Electro-Mechanical Division Tactical Systems Department. They are Tactical Systems Programs, **VIC INGLESIAS,** project manager; Advanced Design, **DICK ODLUM,** acting manager; Control Systems and Simulation, **DAVE WAHL,** manager; Ground Support Equipment, **CHUCK BERNARD,** acting manager; and Weapons Development, **BOB LENT,** manager.

• **HENRY ZIEGLER,** Aerodynamics Research Department, Aircraft Division, was presented a Certificate of Recognition by NASA for the creative development of technology, which was the subject of a NASA Tech Brief publication entitled "Investigation of Exit-Velocity Stratification Effects on Jets in Crossflow."

• **A. R. GANDY,** Electronics Division, has received a Certificate of Recognition and a $50 award from NASA for a Tech Brief dealing with design of a system to contain waste for an extended period in an enclosed environment. The award, for new technology developed under NASA-funded programs, was presented to Gandy by **A. B. LIPSCOMB,** vice president and manager, Avionics Department. Gandy is currently program manager, AIDATS (Army Inflight Data Transmission System).

A. R. Gandy

• **DONALD E. SMITH** has joined the Electro-Mechanical Division Field Marketing office, Huntsville, Ala. Smith has been responsible for program acquisition and product support with the Ventura Division for the past five years and will continue in that capacity, serving both divisions.

LYLE MAXEY, research engineer, left, receives a patent award from Dr. W. B. Simecka, vice president and manager, Tactical Systems Department, Electro-Mechanical Division, for his work in devising a spin stabilized dispenser.

• **JOHN R. JACOBSEN,** has been assigned the responsibility of program manager for the MQM-74C, Chukar II and Basic Training Target programs at the Ventura Division. He had been program director for Aeronautical Target Systems.

• **JAMES W. LINDSAY,** Northrop Services, Inc., Houston, was certified by the Institute for the Certification of Engineering Technicians as a senior engineering technician.

• **MIROSLAV SPICAR,** a Swiss foreign exchange student working with Northrop Services, Inc., in the Radiant Heat Test Facility at NASA's Johnson Space Center, has ended his assignment. He is now on a "camping-out" tour of the United States before returning home.

• **WILLIAM J. OAKES,** vice president and general manager, Northrop Services, Inc. (NSI), was guest speaker for the NSI-Houston Management Club. He discussed NSI activities in the international field.

• **AL SIGGSON,** senior production design engineer, Aircraft Division, has been elected chairman of the South Bay Chapter of the United States Metric Association.

• **JERRY RILEY,** Subsystems Production, Electro-Mechanical Division, was elected vice president of the Planning Commission of Norco, Calif. The commission approves all building plans and alterations in the city.

• **ART INGRAM, H. L. BOIHEM** and **RUSS CHENEY,** all three members of Information Systems, Aircraft Division, have been selected for part-time teaching positions in the El Camino College School of Business night school program.

• **FRED SLATER** and **DEAN SMELTZER,** Precision Products Department (PPD), Electronics Division, recently presented papers at the American Institute of Aeronautics and Astronautics Guidance and Control Conference, Boston. Slater, manager, Marketing, presented "A Strapdown Gyro System Technology Applied to a Crew Escape System." Smeltzer, chief, Components Engineering, "A Technology Evolution, Subminiature Gas Bearing SDF Gyro."

• **ORVILLE R. KYLER,** Ventura Division Mark-30 Program manager and **G. G. DUKE,** Eastern Regional office, attended the change-in-command ceremonies in Washington when **LT. CMDR. FRED FARBER** replaced **LT. COMDR. JERRY POST** as program manager, Targets, for the Naval Sea Command.

• **G. B. DOYLE,** assistant general manager and vice president, Manufacturing and Materiel, Aircraft Division, is the new chairman of the Equal Employment Opportunity/Affirmative Action Program Council for the division.

• **BURL ERVIN,** Electro-Mechanical Division, Customer Relations, received thanks from the ROTC director at Claremont College for a presentation to the students on Northrop and the company's services to the military establishment.

• **R. L. HUTTON** has been named manager, Fabrication and Assembly Inspection and **R. L. PARSONS** is the new manager, Receiving, Source and Tool Inspection at the Ventura Division. Both appointments were made by **H. D. PARKER,** manager, Quality Assurance.

• **CHARLES GIECK,** NSI-Houston, was graduated in August as a bachelor of science, electrical engineering, from the University of Houston. Gieck has worked since 1966 on the degree.

• **CLOYD MC CARTY,** has been appointed United Fund Campaign manager at NSI-Houston to coordinate Northrop support of the United Fund for the eleventh consecutive year.

Employee Saves Boy's Life

Quick-thinking by ELAINE DOWER, buyer, Manufacturing and Industrial Supplies, Aircraft Division, saved the life of a two-year-old boy as well as earning the written thanks of the child's mother. Elaine was walking along a busy street near the Hawthorne facility during her lunch break and spotted JOSE RODRIGUEZ falling out of a pickup truck being driven by his mother. She dashed into the noontime traffic and, scooping up the boy, carried him to safety. "The boy was more shaken up than hurt," Elaine recalled. "I didn't even think when I ran out there. All I knew was I had to get the boy out of the heavy traffic."

NORTHROP NEWS

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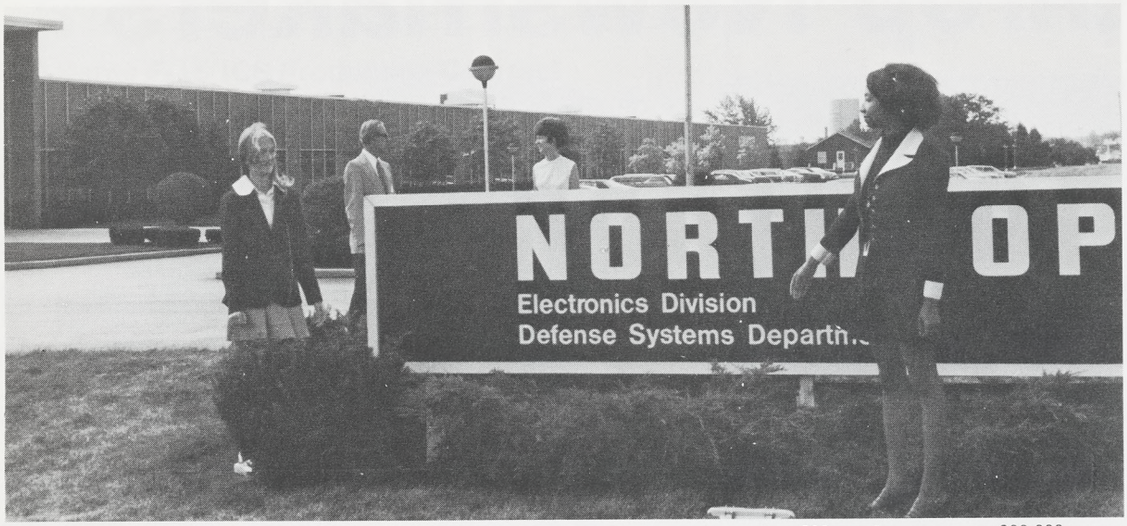
DSD Builds on Heritage of High Technology



DEFENSE SYSTEMS DEPARTMENT facility at Rolling Meadows, Ill., currently employs 800 people, covers over 200,000 square feet of floor space. Formerly the Hallicrafters Co., a subsidiary of Northrop, DSD is now a fully integrated entity of the Electronics Division. Admiring new sign, installed this past spring, are, left to right, Sandi Krabbenhoft, F-15 program secretary; Lou Metevier, deputy manager, Engineering; Wanda Hutchins, secretary to the vice president and manager; Lynn Watkins, Personnel representative.

Located on what used to be rich farmland in Rolling Meadows, Ill., some 30 miles northwest of Chicago's Loop, a 200,000 square foot facility houses some of the most advanced electronic equipment in the world. It also is the place of work for some 800 — soon to grow to 1000 — highly skilled workers who have developed a reputation for skilled technology second to none.

Until the end of 1974, the facility housed the Hallicrafters Co., founded in 1933. Now a fully integrated part of Northrop's Electronics Division, Defense Systems Department (DSD) is active in one of the most sophisticated of all avionics technologies — the development, production and support of defensive electronics to enhance survivability of U.S. military forces.

Recent national defense emphasis on airborne defensive systems to counter increasing "threats" has made electronic countermeasures (ECM) systems one of the major growth areas of the Electronics Division.

Recent integration of Warnecke Electron Tubes, Inc., into Defense Systems Department adds the capabilities of developing and manufacturing special purpose electron tubes and components, and interfacing microwave tubes with equipments developed or manufactured by DSD.

F-15 ICS Win Termed Team Effort

The recent $25 million award to the Electronics Division's Defense Systems Department (DSD) for initial production of internal countermeasures sets (ICS) for the USAF's F-15 fighter is the culmination of years of intensive effort at the Rolling Meadows, Ill., facility.

The award, a major acquisition for Northrop with estimated potential value of the program at more than $100 million, is the result of a division team effort, as described by David N. Ferguson, corporate vice president and division general manager; and W. C. Solberg, vice president and manager, DSD.

"The Defense Systems Department is to be congratulated for obtaining this most significant contract," Ferguson said. "This program is of special significance since it serves as the fundamental technical base from which other systems are being derived."

"The production contract award reflects the advanced state-of-the-art capability of the DSD organization and the concentrated cooperative effort demonstrated by the entire Electronics Division," said Solberg.

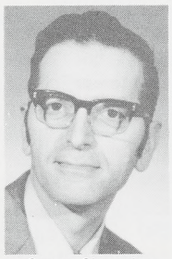
Walter Solberg

Vincent Battaglia

George Fritzel

Ray Brooks

Dennis Pinkowski


George Giacomino

Clifford Mathews

Herb Stark

John Bartels

Robert Kranz

Ronald Risso

Development Effort

Development effort leading to successful integration of the total TEWS (Tactical Electronic Warfare System) was accomplished by close coordination with associated contractors: Loral (radar warning receiver), Magnavox (electronic warfare warning set) and with the F-15 prime contractor — McDonnell Douglas Corp.

The F-15 Eagle air superiority fighter is well into the production phase at McDonnell Aircraft Co., St. Louis, and will become operational with the Tactical Air Command in late 1976. The ALQ-135 will be installed in F-15s in early 1977 according to Air Force schedule.

Team Effort Cited

A significant contribution to success of the pre-production program was attributed to Ferguson for his personal involvement in selection and allocation of key personnel from throughout the division to support DSD during this critical phase.

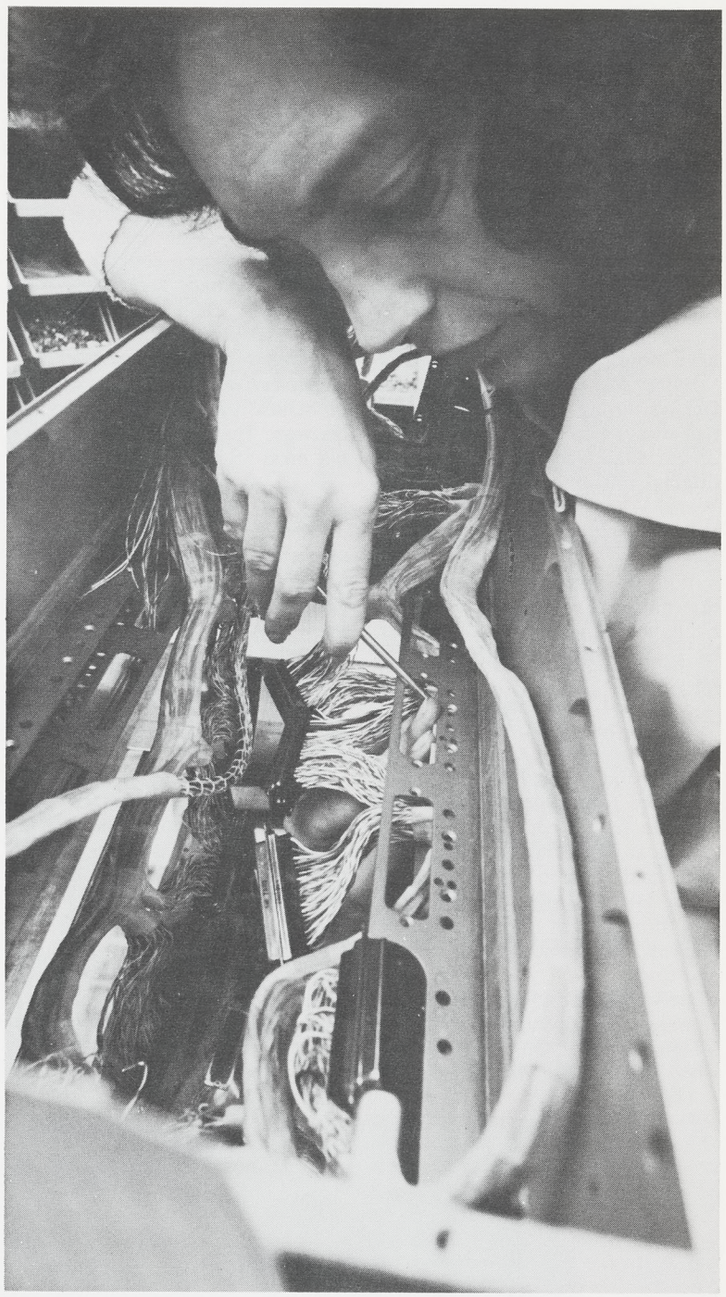
Principal Northrop Electronics Division personnel, among the more than 100 program participants, instrumental in bringing the program to a successful conclusion were: Wallace Solberg, George Giacomino, Dennis Pinkowski, John Bartels, Robert Kranz, Ronald Risso, Clifford Mathews, and Vincent Battaglia of DSD; and George Fritzel and Herb Stark of the MX program office, Palos Verdes.

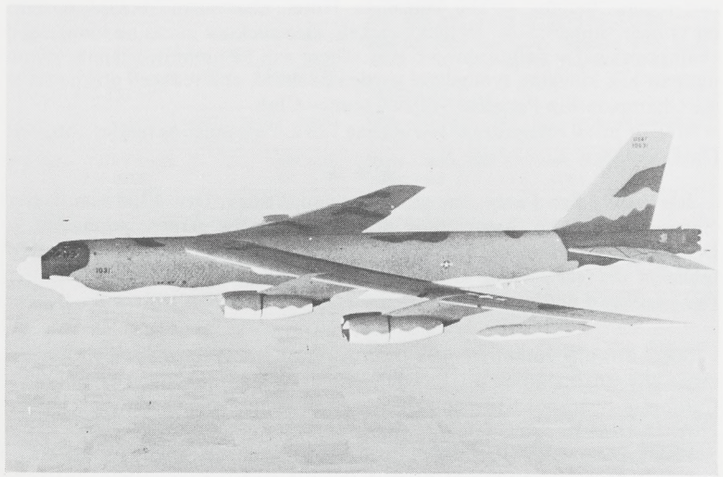
Demonstrated Capability

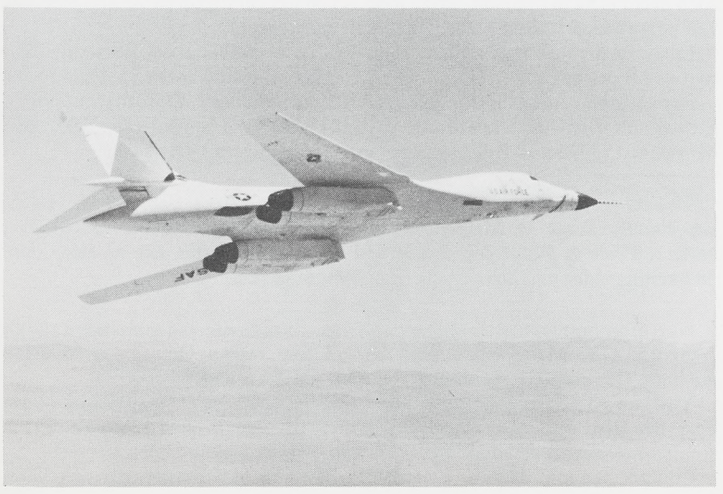
Demonstrated capability of the Northrop Electronics Division and DSD in the F-15 ICS is credited as the prime factor in the subsequent award of contracts for the development of B-1 advanced strategic bomber prototype jamming transmitters, the B-52 ECM power management system, an advanced multiple target electronic warfare system (MULTEWS) designed for use on U.S. Army helicopters, and advanced hardware for application to Navy F-14 and F-18 aircraft systems. Much of the technology incorporated into these successful designs was derived from the F-15 ICS, Solberg said.

DSD Activities Cover Major U.S. Defense Programs

DEFENSE SYSTEMS Department activities cover major national defense programs — including design and development of countermeasures systems for the F-15, above, B-52 and B-1 advanced strategic bomber, below, and the Army's MULTEWS, bottom right. In photo at right, technician Virginia Bata installs wiring harness for F-15 internal countermeasures set (ICS) in manufacturing assembly area. A major DSD program is continuing improvement of countermeasures systems, provided for nearly two decades, for the USAF's B-52 strategic bomber.







Sutter Takes 600-Mile Walk Through Ireland and Scotland

Cliff Sutter, Electro-Mechanical Division reliability engineer, had no gasoline problems on his 600-mile tour of Ireland. He walked every step of the way.

"And it is the only way to go," he says. "Not only is it cheaper, but you see more, meet more people and have more fun."

Sutter was stationed in Northern Ireland during World War II and had always wanted to go back. Now, 33 years later, he got his wish. His original intention was to trace his World War II route from Scotland to North Ireland and then across to Wales.

With this intention he started his international walk in Glasgow, Scotland, hiking to Stranraer where he took a boat to Larne, North Ireland.

At Londonderry

He started walking along the coast, intending to circle the country. But at Londonderry he was prevented from crossing the border into the Irish Republic because of rioting at Maze prison. He turned back and crossed at a different point. His walking trail then took him through such famous places as Galway, Killarney, Tralee, Dublin and Cork.

He walked for 45 days, averaging 15 miles a day, spending the night at Youth Hostels. "Oh, yes," he said with a smile. "They let people of all ages stay in them. Youth, in this case, means young at heart. And that is the way I felt on this walking tour."

He did his own cooking, buying eggs, milk and vegetables from farmhouses and town markets. In the hostels at night, there was a common room where guests sang, played cards and talked. Sometimes he struck up acquaintances going his way. Then they hiked together, but most often he walked alone.

Never Lonely

However, he was never lonely, for all Ireland and its people were with him. Many of those he met were curious about him. They wanted to know why he was doing this and what his wife thought about it. When he mentioned that he had a number of children, they wanted to know why he hadn't brought them along.

"And next time I will," he said. "It is not really strenuous, for I had all day to walk 15 miles and took my time. Nor is the expense great. I think I spent only $200, exclusive of my air fare."

Of all his adventures, he remembers most fondly meeting his 12-year-old daughter's Irish pen pal. "Her father showed me the town. Then I had to meet all the relatives and was treated like one of the family who had come back home."

CLIFF SUTTER backpacks along shore of the Irish Sea in North Ireland. He walked for 45 days through the most famous places in Ireland.

Recreation Notes

★ ★ ★

NRC Travel Club will present a Las Vegas Flight for two weekends in November.

Flights are Nov. 7-9 and Nov. 14-16 via Western Airlines charter. Price, based on double occupancy, is $85 per person and includes air fare, two nights' lodging at the Hacienda Hotel, champagne breakfast, buffet brunch, dinner show, 20 lucky nickels, free cocktail in casino lounge and champagne party daily from 5-6 p.m. There will be unlimited tennis, swimming or just lounging around the garden poolside, and reduced green fees at the Championship Paradise Valley Country Club.

Mail or bring reservations to Henrine Love, Personnel Activities, Aircraft Division, Orgn. 1263, Zone 5.

★ ★ ★

It's Family Fun Party time at Disneyland, Friday, Oct. 17, 8 p.m.-1 a.m. Sponsored by the Association of United States Army, admission to Disneyland, unlimited use of all attractions with dancing, bands, shows, entertainment and free parking will cost employees only $5.25 per person. Children two years and under, free. See your Personnel Activities offices for tickets.

★ ★ ★

NRC Bowling commissioners from Aircraft and Electronics divisions are extending an invitation to bowling enthusiasts throughout the Southern California operations to compete in an all-facility Northrop tournament, Nov. 15-16 at Imperial Bowl, El Segundo.

The tournament will feature men's and women's singles, men's and women's doubles, and mixed doubles in an A and B division. Entry fee for each event is $4 per person. Prize fund is 100 per cent returnable and trophies will be awarded to first place winners in each event.

Entry forms and tournament rules will be available at all Personnel Activities offices beginning Oct. 1. Deadline for returning entries is Oct. 31.

For further information contact commissioners Dorothy Baldwin, Electronics Division, Hawthorne ext. 2213; Rosalie Smith, ext. 5203, Bob Moyer, ext. 3096 and Bill Myerson, ext. 2562, Aircraft Division.

★ ★ ★

Tickets go on sale at your Personnel Activities offices, Sept. 29 for Northrop Family Days at Magic Mountain on Saturday, Nov. 1 or Sunday, Nov. 2. Price is $4.50 per person and includes unlimited use of more than 50 exciting rides and attractions from 10 a.m.-6 p.m.

★ ★ ★

Northrop employees, families and friends are invited to a six-day tour to Acapulco. Travelers will depart Oct. 2 and return Oct. 7 via Western Airlines. Cost is $279 for adults, $159 for children under 12.

You can go golfing, fishing or just vacationing on Nov. 17-22 in Mazatlan. This trip also only costs $279 for adults. Children under 12 pay $169. A small amount will be added for taxes and airport fees for the tours.

Contact Jeannie Zubak, Electronics Division Hawthorne, ext. 2542.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Chevrolet, 1973 Caprice Estate wagon, 454, trailer pkg. trans., a/c, p/s, p/b, AM/FM stereo, 26,800 mi. $3650; Volkswagen, 1956, converted into pickup, 2900 mi. on eng., $1500. 714-993-1294.

Motorcycle, 1972 Suzuki 550 GT, $600. 213-428-2616.

Capri, 1974, 19,000 mi., 2000 cc eng., AM radio, $3150. 213-325-5644.

Motorhome, 1974 Havester Mini Dodge chassis, self-contained, sleeps 6, a/c, 3000 mi., $9200. 213-921-5336.

Motorcycles, 2 Honda 100s, 1971, $350 ea.; Yamaha 360 MX, 1972, $500. 213-327-3063.

Gremlin, 1972, $1695. 213-329-9809.

Triumph, 1969 GT6, needs work, $700. 213-386-3823.

Lotus Cortina, 1967, 1 owner, reblt. eng., $1995. 213-372-6448.

Motorcycle, 1973 Harley Davidson 125cc Enduro, 571 mi, 2 stroke, $550. 213-634-4250.

Motorcycle, Penton 125, few miles, new electronic ign., $500. 213-327-9796.

Ford, 1965 van, $750. 213-370-4892.

Mustang, 1973 h/top, 17,900 mi., orig. owner, p/s, p/b, a/c, $3700. 714-892-3171.

Motorcycle, 1971 Honda CL350K2, book rack, pass. b/rest, 13,500 mi. $495. 213-538-5774.

Volkswagen, 1972, stick, mag whls., AM/FM stereo radio, $2000. 213-677-3454.

Mazda, 1972 RX3 wagon, AM/FM stereo, many extras, reblt. eng., $2100. 213-973-5010.

Corvair, 1961 10-pass. van, 4-spd. man. trans., 6-cyl., 110 eng., $500. 213-644-4892.

Motorcycle, 1974 Triumph, 500 cc, $1200. 213-327-6401, 213-329-4461.

Pontiac, 1973 Custom Lemans, AM/FM stereo, auto. trans., a/c, $2750. 213-372-3589.

Motorcycle, 1975 Honda XL 350, on-off-road, $1100. 714-836-8296.

Motorcycle, 1969 Honda 125 CL, good eng., lug. rack, 21,000 mi., $250. 213-779-2895.

Mazda RX2, 1973, 4-dr., auto., 2200 mi., 5 yrs. or 50,000 mi. warranty, $2 200. 213-676-6229.

Oldsmobile, 1969, Delta 88, radio, a/c, p/s, $825. 213-833-7819.

Motorcycles, 1974 250YZ Yamaha, little use, $1300, 1974 Yamaha 360 Enduro, 3600 mi., $875. 213-396-2396.

Ford, 1973 LTD, fully equipped, AM/FM stereo, $2750. 213-675-4234.

Motorcycle, 1975 Honda 750, $1900. 213-679-2714.

Datsun, 1971 240Z, a/c, mags, many extras, $3500. 213-540-2025.

Dune Buggy, 1200 V.W. eng., rail, w/tow bar & spare eng., $300. 213-370-7749.

Datsun 1200 Fastback, 1973, r/h, auto., new tires & paint, $2295. 213-884-4545.

Camaro, 1969, p/s, auto. trans., 307 eng., AM/FM radio, tape deck, $1400. 213-378-8765.

Corvette, 1969, 350 C.I., auto, Konis, flares, many extras, $4600. 213-641-0326.

Motorcycle, 1969 Honda 50 mini trail, needs work, $60. 213-545-1747.

Volvo, 1963 P-1800 sport cpe., 4-spd. w/overdr., AM/FM radio, $700. 213-778-7594.

Pontiac, 1965 GP, r/h, p/s, p/b, $400. 213-675-1733.

Motorcycle, 1971 Hodaka, $200. 213-676-5921.

Chevrolet, 1964, 4-dr. Stylemaster, completely restored, new eng., trans. & paint, $1500. 213-676-8331.

Miscellaneous For Sale

Sailboat, 26' Seabird, 8 h.p. diesel inbd., 2-person inflatible, RDF, anchors, botton newly painted, $3950; drink holder, chrome plated, $2; chord organ, Sears, C&G, 4-rhythm, $59. 213-320-8297.

Mattress & box spring, twin size, $30. 213-677-7421.

Miscellaneous For Sale

Dresser, Emperor style, oak, w/mirror, $95; dresser, oak, 4-drwr. w/mirror, $75; dresser, oak, 3-drwr. w/mirror, $65. 213-325-3404.

Golf Clubs, MacGregor reg., $60; rcbs loading equip. for 45 auto., .357 mag, .38 spec, .308 & 30-06, $150 or sell sep.; dial caliper, Starrett, 6", $25. 714-847-3120.

Headers, Jardine 4-1 for 750 Honda, $65. 213-428-2616.

Camper, 6-Pac, $600. 213-326-9156.

Tonneau Cover & repair manual for 1964-67 MGB, $10. 213-371-2258.

Refrigerator, Philco, 16 cu. ft., coppertone, $95. 213-538-3518.

Bunk Beds, maple $60; crib w/mattress, $40; chest of drwrs., $25. 213-375-5009.

Refrigerator-Freezer, GM/Frigidaire, 20 cu. ft., custom deluxe model, frost-proof, side-by-side, 4 yrs. old, $250. 213-553-0571.

Sailboat, Islander Bahama, 24' sloop, custom mah. int. w/galley, 18-gal. water tank, Chrysler motor, many extras, $5500. 213-375-7149.

Rug, Oriental antique, w/padding, 9 x 12, $150. 213-822-5873.

Typewriter, Smith-Corona, 15" carriage, $60; guitar, $20; copier, AB Dick, $25. 213-320-8325.

Boat, 14½' Glen-L, Power Cat, McCulloch 45 eng., tandem axle all steel trailer, fully equip., $800. 213-361-1039.

Port-A-Potti, chemical flush-type, $20. 213-375-9353.

Aqua Lung Regulator, U.S. Diver's, Calypso IV, used twice, $70; backpack, Scuba-Pro, $30. 213-866-8977.

Port-A-Crib, complete, $20. 213-679-4863.

Hair Dryer, Beauty Shoppe-type, complete, $35; school desk, old-time, $35; electronic test equipment, $175. 213-941-1865.

Saddle, English, 2 girths, new saddle pad, $100. 213-378-3845.

Headers, set, Hedman, for any car, won in contest, $100. 213-645-7715.

Train Layout, N-gauge, 4' x 6' table, 20 switches, pwr. pack, eng. & cars, $100. 213-633-6106.

Built Ins. dble. wall ovens, Frigidaire, elec., glass doors, $100; cooking top, Frigidaire, elec., $50; stove hood w/fan & lights, $25, all coppertone. 213-376-2324.

Pups, Pekingese, AKC reg., shots, housebroken, 6 mos., $75. 213-697-0769.

Movie Camera, Bell & Howell, 8 mm, zoom lens, leather case, $75. 213-532-4984.

Dog, boxer, male, brindle & white, 5 yrs. old, papers, $50; desk, w/chair, child's, white, $15. 213-329-0196.

Bar Stools, 5 black vinyl, swivel seats, $20 ea. 213-320-5281.

Revolver, Smith & Wesson, Model 19, 357 mag., 4" bbl., $160. 714-894-5195.

Turbojet for Whirlpool therapy, $35. 213-376-2127.

Chairs, 4 matching, antique, oak, $135. 213-892-8268.

Dining Room Set, $25. 213-374-0118.

Dressing Table, baby, brown wicker, $15. 213-538-5774.

Corner Group, 2 beds, table, covers & bolsters, $50. 213-378-0165.

Piano, Emerson upright, $250. 213-376-4831.

China, Parisienne, 8-pl. setting, $50. 213-545-7586.

Tri-Manifold, 2-bbl. carbs. complete set-up for 406, 352, 390 & 427 Ford eng., $125. 714-320-4586.

Vacuum, Hoover upright, $25. 213-346-4897.

C.B. Radio, mobile, 23-channel, db meter, power-mike, rf linear amp, other access., 3 wks. old, $325. 213-779-2895.

Sailboat, Cal-24, on trailer, outbd motor, cover, sleeps 4, $4300. 714-893-0414.

Sewing Machine, elect., $20. 213-375-9377.

Crypt, sgle., new masoleum, Green Hills Memorial Park, San Pedro, $795. 213-542-4931.

Tent Trailer, Nimrod, sleeps 6, bltin kit. & storage, 7000 btu htr., awning, $925. 213-323-7171.

Formal, orange chiffon pleated, size 11-12, never worn, $30. 213-679-0517.

Sewing Machine, Singer, port., $39.95; vacuum, Sears Power-mate w/attach., $39.95. 213-324-3446.

Miscellaneous For Sale

Travel Bar, 13" x 11" x 6", holds 3 bottles, alum. tumblers & bar tools, $10. 213-375-2841.

Transaxle, $55; door, r.h., complete, $20, from 1962 VW. 213-542-2390.

Bicycle, 26" Sears 3-spd., $50. 213-346-3802.

Boat, 19' Glasspar Club Mariner, 135 h.p. Mercury outbd. motor, many extras, $3000. 213-532-1763.

Dinette Set, 5-pc., walnut, chair, 3 leaves, $100. 213-671-9371.

Rug, black bear skin, felt lined, $375. 213-379-3485.

Cornet, case, Yamaha, $195. 213-378-4959.

Cabinet, w/doors, French Prov. style, 38" h. x 42" l. x 24" d., $75. 213-675-2005.

Golf Clubs, Graphite driver, Aldila #9 shaft, Pedersen head, D2 swing wt., $75. 213-545-6387.

Range, Frigidaire Touch & Cook, computerized elec., won on game show, self-cleaning oven, harvest gold, $650. 213-839-5565.

Stove, 4 burners, big oven & broiler, $55. 213-370-1479.

Snare Drum, Ludwig, $50; spinet organ, Wurlitzer Mod. 4410, $300. 213-545-1747.

Refrigerator, 16 cu. ft., $150, other items, various prices. 213-778-7594.

China, white/platinum trim, complete service for 12, $75. 213-673-0195.

Wedding Gown, worn once, chantilly tiered lace, size 8, $100. 213-428-4825.

Bedroom Set, corner, Mel Eve custom beds w/ drwrs., storage cupbd. & desk beneath ea. bed, & corner bookcase, $150. 213-676-5921.

Table, redwood, 2 benches, 6', $35; dresser w/mirror, $20. 213-329-0196.

Ski Boots, 1974 Hanson Exhibition, size 10-11, $90. 213-676-8331.

Auto Collection, Avon bottles, 15 pcs., $100. 714-838-7161.

Mobile Home, 12'x55' Pan American, attached glassed in room, 10'x36', $12,000. 714-846-8928.

Bedroom Set, dresser, white, triple, twin beds, mattress, desk, $185; chandelier, Spanish wrought iron, $35. 213-378-7285.

Camper, cabover, 6' bed, never used, refrig., stove, sink, extras, $250. 213-371-5308.

Organ, elec. 30-chord, $75; bench & books, $10. 213-430-8581.

Air Conditioner, Admiral in-window, 6200 BTUs, $30. 213-677-5649.

Camera Outfit, Nikon S2; Contax IIIa; Sonnar, 50mm f1.5; Nikkor, 50mm f1.4; Nikkor, 28mm f3.5; Nikkor, 85mm f2; Nikkor, 135mm f3.5; Universal Viewfinder; cases, handbooks, $750. 213-541-6476.

Wanted To Buy

Utility Trailer & rotary mower, reasonable. 213-941-5549.

Pressure Cooker, 16 qt., for canning w/instruction booklet. 213-325-6131.

Camera, 35mm., compact, range finder, light meter. 213-375-4747.

Karmann Ghia, 1970 or later. 213-323-7625.

Vacuum Cleaner, used, good condition. 213-826-2273.

Motorcycle, Yamaha 175 trail bike. 213-645-2711.

Golf Clubs, cart & bag, women's. 213-325-5245.

Volkswagen, 1960-67, prefer sunroof. 213-397-6490.

Shopsmith, used, in good condition; drill press, bench-type. 213-630-4188.

Rink Roller Skates, men's, size 8-D, woman's, size 3½, white. 213-326-1197.

Rentals Wanted

Room, private home, man employed, non-smoker, Gardena or Torrance. 213-675-7547.

Lost & Found

Tie Tac, gold, lost, shape of numerals 24, great sentimental value, reward. 213-770-2740.

Earring, ladies, found Wed., Aug. 6 in ladies room at Mariposa, upstairs, west end. 213-530-8928.

Personals

Your beautiful wreath was a wonderful tribute to our mother. Thank you to all the 747 friends. THE WICKER FAMILY

To all the guys & gals who gave us a retirement tribute we will never forget, our deepest appreciation always. C. B. HARLEY

My sincere thanks to all my friends & co-workers at Northrop for my retirement party & nice gifts. NOEL WOIRHAYE

Employees Invited To Participate in 'Northrop Aircraft'

By this time next year an attractively bound commemorative history of the Aircraft Division, amply illustrated with photographs, will be available to Northrop employees and their friends. Slated for publication in the spring 1976, the book will be titled "Northrop Aircraft 1939-1975".

Fred Anderson

The book will be authored by Fred Anderson of Engineering Planning, who is a long-time member of the American Aviation Historical Society, and is a historian in his own right. He has been asked by General Manager Welko Gasich to collect and write the material that will cover activities from the pre-World War II years of Northrop Aircraft, Inc., to its present-day multinational role as part of a corporation with 25,000 employees.

In Proposals Area

Anderson will carry out the project within the Division Proposals area under the direction of Jack Mannion, vice president, Administration.

Anderson knows that much "history" is in the hands of those veteran employees who helped make it, so he is asking them to jog their memories. If anyone has photographs, whether personally taken or company issued, of early Northrop products, please contact him on ext. 4368.

All material will be acknowledged, and loanees can be assured of the safe return of their memorabilia.

Personals

Many thanks to all who attended & contributed to my very nice retirement party. I shall always remember my happy days at Northrop & the many good friends I worked with & met. JOHN PAWLICKI

My wife joins me in thanking the people at Northrop Elect. Div. for the nice gifts for our new born son, Mark Allen. VIVIAN & TONY BLACKWOOD

Class Reunion, Leuzinger high, class of '66 is planning 10-yr. reunion. 213-675-0401, 213-376-1064.

I want to extend my heartfelt thanks to all my friends for their many kindnesses, cards & moral support during my recent surgery. BETTY KILTZ

In loving memory of Harold E. Warner during his recent illness & death, we wish to express our deepest appreciation for the expressions of sympathy, cards, flowers, & remembrances. MRS. DONNA WARNER, CYNTHIA NOICE, DAUGHTER, & FAMILY.

Free

Kittens. 213-326-7927.

Pup. German shepherd/Samoyed, 9 mos. old, male, shots. 213-860-2948.

Rides Offered, Wanted

Carpool riders wanted from So. Pasadena, San Marino area to Hawthorne facility, Aircraft Div. ext. 4540, 213-796-4764.

I'M A FUN JUMPER

Nygard Gets High On Skydiving

You can do almost everything an airplane can do. You can do barrel rolls, front loops, back loops; you can go forward or backward by changing the position of your arms and legs. And you are doing all this 12,000 feet in the air.

They call it skydiving and John Nygard has experienced this free-falling sensation 475 times.

Nygard, maintenance leadman at Palos Verdes, made his first wide-eyed jump from an airplane in 1967 at the Elsinore Paracenter. Since that first jump, Nygard has participated in several competitive and non-competitive types of jumping.

The sport is divided into three areas: accuracy, style and relative work. Accuracy consists of no free-fall — the jumper opens his parachute immediately and attempts to land on a target the size of a malt cup lid. Style is a series of individual maneuvers similar to high-diving.

Tried Accuracy Competition

"I tried accuracy competition for awhile, but I prefer relative work — it's just fun," said Nygard, who classifies himself as a "fun jumper." Relative work is the sport of working with a team to perform configurations such as "stars" and "snowflakes" while in free-fall.

In 1973, Nygard and his team won first place in the Elsinore Star-Crest Recipient Scrambles Competition Meet. Since that time, however, he "has participated solely in non-competitive work." "I am not what you would call 'serious'," said Nygard, who enjoys the sport for its own sake and not for competition.

While he has had no injuries since he first donned a parachute, Nygard did have one anxious moment when he had to use his reserve chute, but that isn't even considered a close call by jumpers.

Jumped in Many States

Nygard has jumped in Minnesota, Wisconsin, Louisiana, Florida, Nevada, Nebraska, Illinois and California. He now enjoys the sport mainly at the Elsinore Paracenter which is the closest drop-zone to Los Angeles and the largest in this area.

JOHN NYGARD joins hands with free-falling friends during skydiving exercise.

Service Awards

Five Electronics Division employees observe their 25th anniversaries this month to highlight September service awards.

Those observing 25th anniversaries are: Frank Cranmer Jr., Manufacturing unit, and Leslie Shaw, Payroll and Time-Keeping unit, Palos Verdes; and Robert Whitman, Avionics Engineering Department, Richard Collins, Field Engineering and Training unit, and Lowell Olsen, Special Projects Systems unit, Hawthorne.

Other September service awardees are: 20 years — Robert Wilson Jr., Stanley Zenz, Walter Davison, Kazu Miya and Raymond Latchford, Hawthorne; Art Gandy, George Watkins Jr. and Arthur O'Leary, Palos Verdes;

10 years — Charles Lotspeich, Palos Verdes, and Ralph Leon, Hawthorne; five years — Maria Lowe, BSL South.

Program Chronology AN/ALQ-135(V)

(designed and developed by Northrop-DSD.)

Oct. 1971 — **Initial contract for engineering development, fabrication and test of production hardware.**

Feb. 1974 — **ICS performance evaluated, on USAF electronic warfare simulator, Fort Worth, Tex.**

June 1974 — **Delivery of first pre-production unit.**

April 1975 — **Completion, successful demonstration aircraft compatibility and effectiveness of ICS during Air Force Category I flight tests.**

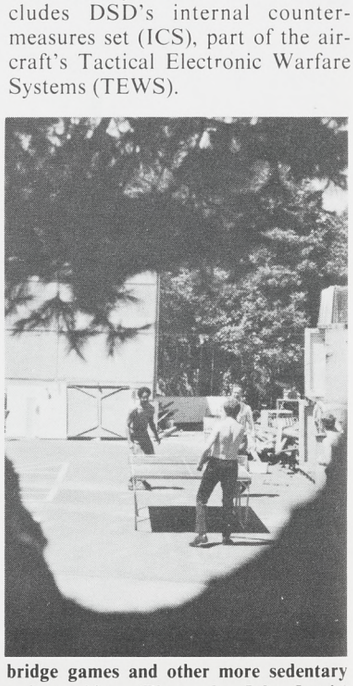
June 1975 — **Completion, successful environmental qualification and reliability testing.**

Sept. 19, 1975 — **$25 million contract for initial production of F-15 ICS awarded to DSD.**

Chief Test Pilot Tells F-15 Story

Irving L. Burrows Jr., chief test pilot for McDonnell Aircraft Co., and the first pilot to fly the F-15 Eagle, was the speaker at the Sept. 9 meeting of the Defense Systems Dept. Management Club in Rolling Meadows, Ill.

Burrows, who made the first F-15 flight on July 27, 1972, discussed the Mach 2-plus aircraft, which is designed to outperform and outfight any enemy fighter aircraft in the foreseeable future. He said that the F-15 features an advanced electronic system to sort out and identify targets, and to evade enemy defenses — which includes DSD's internal countermeasures set (ICS), part of the aircraft's Tactical Electronic Warfare Systems (TEWS).



SUMMER FUN AT LUNCHTIME: Keeping fit during lunch break at Palos Verdes facility involves spirited games of volleyball, left, and pingpong. Other activities not shown include bocce ball on facility lawn, bridge games and other more sedentary pursuits, such as sitting on the sidelines and watching. (Photos by John Lewis)

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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AIDATS Team Visits Far East

Briefings for high-ranking Army and Marine Corps officers on operational capabilities of AIDATS — Army In-Flight Data Transmission System — were conducted recently by an Electronics Division team visiting Hawaii and Korea.

The team, comprised of A. B. Lipscomb, vice president and manager, Avionics Dept.; Carl Bose, manager, Advanced Development; and George Kelly, Business Development manager, briefed the CINCPAC — Commander-in-Chief Pacific Forces — staff in Hawaii, and then went on to Korea for a briefing with the 8th Army staff.

Returning from the Far East, Northrop's AIDATS team held meetings with Maj. Gen. William McLeod, USA intelligence officer and acting commander-in-chief, and Maj. Gen. Frank Lang, USMC, operations officer, CINCPAC.

Meanwhile, work on the $3.5 million contract for production engineering of the AIDATS system is proceeding on schedule, said A. R. "Art" Gandy, program manager.

Gandy said that three program reviews have been held, involving personnel from the Army Electronics Command (ECOM), Aviation Systems Command, and Army Intelligence units. Gandy and Bob Cooper, project engineer, also participated in the Army's second annual Remote Sensing Symposium, held by the Army's Electronic Proving Ground, Fort Huachuca, Ariz. on Sept. 16-18.

Also during September, subcontractor negotiations were completed with Sperry Microwave, Clearwater, Fla., and Scientific Atlanta, Atlanta, Ga. Members of that team were Cooper, Chet Wetzel, engineering specialist, and Ken Schiefer, Major Subcontracts Administration.

New Contract Received

Electronics Division's Avionics Department has received a contract in the estimated amount of $1.9 million, of which $978,000 was obligated, covering 22 computers for the Northrop-produced Inertial Doppler Navigation Equipment (IDNE) for the Air Force's C-5 transport.

The award, from USAF's San Antonio Air Logistics Center, Kelly AFB, Tex., is for spare units as part of the Avionics Department's continuing support program for the C-5 navigation system.

RIGHTS FOR HANDICAPPED are emphasized by Electronics Division's Patricia Partida, employee relations representative, during National Employ the Handicapped Week designated by President Gerald Ford as Oct. 5-12. Patricia explains it has always been Northrop's policy to employ the handicapped, and to assist handicapped employees, and that a written Affirmative Action Plan for the Handicapped now spells out the division's policy. Parking and other facilities are designed to help handicapped employees and all are encouraged to know their rights, she says.

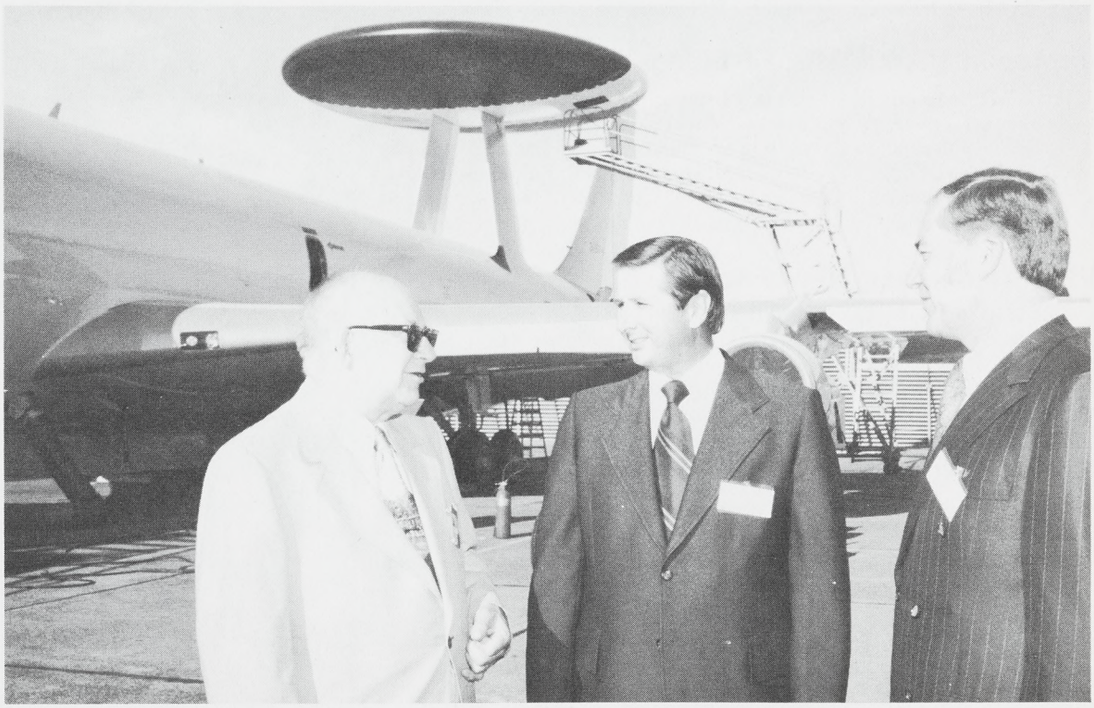
Facility Plan Set by PPD

The Electronics Division's Precision Products Dept. (PPD), Norwood, Mass., has announced plans for construction of a 53,000 sq. ft. facility to be located on Morse Street across from its Plant Three.

Plans call for the new facility, to be designated Plant One, to include a computer facility, 148-seat cafeteria, a service core providing access to support spaces such as conference rooms and equipment and storage areas, and office space on the second floor.

Joseph D. Yamron, vice president and manager, PPD, said the site development will preserve the ecological environment as much as possible by maintaining existing trees and ground treatments, and supplementing the affected area by landscaping.

Massachusetts Governor Michael S. Dukakis keynoted a press conference held September 17 at PPD to announce construction of the new facility. This activity, and a subsequent tour of PPD, received extensive coverage by New England news media representatives.



GETTING CLOSEUP LOOK at USAF Airborne Warning and Control System (AWACS) aircraft, A. B. Lipscomb, vice president and manager, Avionics Dept., center, discusses program's progress with C. A. Wilkinson, Boeing's AWACS program manager, left, and John Dugan, Hamilton Standard. In background is first AWACS pre-production aircraft, equipped with complete production set of avionics, scheduled to make its first test flight ahead of schedule in late October. Northrop's Electronics Division is under contract to Boeing for integration, production and testing of all AWACS navigation and guidance equipment.

★ News Briefs ★

Northrop Acquires Additional Facilities

Thomas V. Jones, president and chief executive officer, has announced that Northrop has purchased the Hawthorne facilities of Magnetic Peripherals, Inc., a subsidiary of Control Data Corporation. In making the announcement, Mr. Jones said, "We believe this area continues to offer a solid employment base for the types of technology and production skills needed to continue the development and manufacturing of the company's F-5E and F-5F tactical fighters, Boeing 747 fuselage shipsets and the engineering and eventual production of the company's new F-18 Air Combat Fighter for the U.S. Navy."

Northrop to Provide Support Services for RSAF

Northrop has received initial funding for a program in excess of $100 million to provide continued support services for the Royal Saudi Arabian Air Force (RSAF). First increment under the contract from the U.S. Air Force is $58.2 million. Under the government-to-government agreement between the United States and Saudi Arabia, Northrop will maintain the level of training and support services achieved in conjunction with the RSAF. A significant portion of the new contract covers the construction of maintenance shops, aircraft shelters, classrooms and offices to be performed by the George A. Fuller Company, a major construction firm and operating division of Northrop.

Ventura Division Produces 400th MQM-74C

Ventura Division has produced its 400th MQM-74C target aircraft for the U.S. Navy. Coupled with the 1768 earlier model MQM-74As the division manufactured starting in 1967, a total of 2168 MQM-74 target aircraft have now been produced. The 74C model is operational with both the Atlantic and Pacific fleets.

AIDATS Team Visits Far East

Briefings for high-ranking Army and Marine Corps officers on operational capabilities of AIDATS (Army In-Flight Data Transmission System) were conducted recently by an Electronics Division team visiting Hawaii and Korea. The team briefed the 8th Army staff in Korea and CINCPAC (Commander-in-Chief Pacific Forces) in Hawaii.

Improved HAWK Missile Firing at MQM-74C

First Certified Round Lot Acceptance test of the Improved Hawk missile using the Ventura Division's MQM-74C target aircraft proved successful when one was fired at the Army's White Sands Missile Range, N.M. The test took place on Sept. 23, and on the target's first presentation it was hit by the I-HAWK. The division is under contract to the Army Missile Command to provide a minimum of 12 flights this fiscal year.

PPD Announces New Facility

The Electronics Division's Precision Products Department (PPD) has announced plans for construction of a new 53,000-square-foot facility in Norwood, Mass. The building will house a computer facility, cafeteria, offices and conference rooms. Massachusett's Governor Michael Dukakis keynoted a press conference at PPD announcing the project.

Northrop Architectural Systems to Work on Hotel

Northrop Architectural Systems will provide instruction to local construction personnel who will assemble and install the company's Arcadia windows and curtainwall in the new Crillon Hotel in La Paz, Bolivia. John Jett, chief design engineer, will handle the project.

Ventura Division to Dedicate Flagpole

On Nov. 11, the Ventura Division's new flagpole in front of the Administration Building will be dedicated as part of the Conejo Valley's Bicentennial Centennial. The Thousand Oaks High School band will provide music and W.E. Woolwine, corporate vice president and division general manager, will dedicate the flagpole as well as unveil a bronze plaque commemorating the event.

JUBILANT MEMBERS OF RNoAF 336th Squadron give their squadron leader ceremonial victory ride following their team victory in September at the NATO Bull's Eye '75 weapons delivery competition held at Sola Air Station, Norway.

FOR BULL'S EYE '75 TITLE

Norwegian F-5s Win Meet

Crack performances in weapons delivery by members of the Royal Norwegian Air Force flying F-5A fighters, gave the RNoAF the team title in Bull's Eye '75, the semi-annual bombing and gunnery competition for Northern European NATO air forces.

The RNoAF's 336th and 338th squadrons finished first and second ahead of five German squadrons which flew F104G and G-91 fighters.

The Norwegians' win boosts the F-5's record in formal international weapons delivery competitions to 25 out of 29 since 1964. During that time F-5s have taken the measure of American-made F-100, F-4, F-86, A-4, F-84 and A-7 fighters as well as French Mirage and British Hawker Hunter aircraft.

NORTHROP SERVICES, INC., is now providing support for the National Ecological Research Laboratory in Corvallis, Ore. Here, technician Loren Russell makes analysis of soil sample for an environmental project.

Northrop Newsmakers

Frieda Mooring

• **FRIEDA MOORING,** administrative accountant, Palos Verdes, became the first Electronics Division employee and first woman at Northrop to observe her 35th anniversary with the company this month.

• **DOUGLAS R. CULVER** has been named associate director, Corporate Pension Plan Administration.

• The Aircraft Division has established a new Public Affairs Department with **JACK MANNION,** formerly vice president, Administration, being named vice president of the department. **CARL BURRIS** has been appointed vice president, Administration, replacing Mannion. Other appointments went to **C. W. BENSON,** vice president, Materiel and Procurement; and **STEVE SMITH,** vice president, Iran Operations.

• **DR. V.W. HOWARD,** vice president, Engineering, Ventura Division, presented a paper on "Loran-Aided Reconnaissance RPV" at the recent ADPA symposium, Eglin AFB, Fla. The paper dealt with last year's successful Solid Shield flights of the NV-128 RPV.

• **JERRY RILEY,** supervisor of Assembly, Page Court, Electro-Mechanical Division, was grand marshal of the Norco, Calif., Labor Day Parade. The honor goes to the "Outstanding Citizen of Norco." Riley was chosen because of his civic activities which span a period of seven years.

• **FRANK FORBATH,** engineering specialist, Aircraft Division, and his wife **JEAN,** are organizers and chairmen of Share Our Selves, an all-volunteer church group in Costa Mesa, which recently was awarded the $5000 Disneyland Award for providing "the best community service of an ongoing nature to citizens of Orange County."

• **STEPHEN D. YSLAS** has joined the corporate staff as assistant general counsel. He graduated from the Law School of the University of California at Los Angeles.

Dan Collins

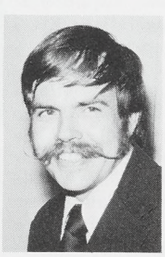
• **DAN J. COLLINS,** director, San Antonio, Tex., district office, received a service award in honor of his 35th service anniversary. Collins was visiting the Aircraft Division for program updates.

• **JOYCE BROCK,** Northrop Data Processing, earned her master's degree in management science from West Coast University.

• Ventura's Marketing Department is planning its first tennis tournament to take place during November. **RAY LAVI** is chairman of the event. Time and place will be announced later. Unusual prizes to the winners have been promised.

• **BETTY BENSON,** Aircraft Division, has been appointed chief coordinator of the High School Involvement Program (HIP).

• **B. F. SCHIER** and **FRIEDA ECKER,** Aircraft Division, attended the Travel and Transportation Council Corporate Travel Seminar and Workshop at the Los Angeles Hilton last month.


Richard Tye

• **RICHARD TYE,** senior engineer, Aircraft Division, attained a doctor of philosophy degree in aerospace engineering from the University of Southern California.

• A paper presented by **STEVE ZURNACIYAN** and co-authored by **PAUL BOCKEMOHLE,** Electronics Division, at the 45th Shock and Vibration Symposium in Dayton, Ohio, was reprinted in the Shock and Vibration bulletin published earlier by the Naval Research Labs. The paper dealt with dynamic service environment for airborne electronic equipment on a remotely piloted aircraft.

• **H. J. JABLONSKY** has assumed new responsibilities as vice president and senior corporate executive, Iran.

William Richardson

• **WILLIAM RICHARDSON,** senior scientist, Aircraft Division, earned his doctorate in industrial psychology from Claremont Graduate School. With the assistance of the Educational Refund Program, he was able to complete his studies in six years.

• **FRED HOFFRICHTER,** Northrop Architectural Systems (NAS) Marketing manager, attended NAS' Third Annual International Licensee Conference in Tokyo, Japan.

• **DON AVALLON,** manager, Program Management and Product Support Department, Electronics Division, was dinner speaker at a meeting of the Masonic Lodge — Redondo Beach. His presentation covered the AWACS program and Northrop's integrated navigation system.

Roy McQuillan

• **ROY McQUILLAN,** Precision Products Department supervisor of Materials and Processing, attended a seminar on "Contamination, Detection and Control," at Anaheim.

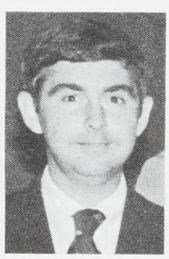
• Ventura Division's **GENE CRABB** is the new president of the Thousand Oaks High School Band Booster's Club. His daughter, **TERI,** 17, a senior, is one of the band drummers.

• **JEAN GERARD LOUVIER,** procurement manager, Aircraft Division, was presented a University of California Professional Designation in Purchasing Management Certificate.

• **MARY POLK,** Electro-Mechanical Division, is one of two women serving on the international board of directors of the Standards Engineering Society and is also the first woman chairman of the Los Angeles Chapter of the society.

Four USAF Officers Report For EWI Program Assignment

Captain Johnson


Captain McFarlane

Captain Rogers

Captain Thelen

Four USAF officers have been assigned to Northrop to participate in the Education With Industry (EWI) program.

Jointly sponsored by the USAF Institute of Technology and leading government contractors, the EWI program is essentially a management internship program for selected career officers with emphasis on on-site industrial education experience.

During their 10-month tour of duty with Northrop, the officers will be rotated through the various departments of the company's divisions and subsidiaries.

The four officers are:

CAPT. LEROY JOHNSON has nine years of USAF experience in aircraft and missile operations. His most recent assignment was with the 5 Bomb Wing as a command post controller. His duties included validating, implementing and disseminating Headquarters SAC Command and Control directives.

CAPT. DAVID MC FARLANE has been in the USAF for seven years. As wing flight examiner he evaluated wing supervisors and T-37 instructor pilots during flight checks to determine the flying proficiency, knowledge, and application of operating procedures and pilot instructional ability.

CAPT. JOHN ROGERS entered the Air Force in 1966 and for the past five years has been a T-39 pilot and flight examiner performing ground and air instruction and evaluation of assigned and attached pilots. He is a graduate of Pilot Instructor School, USAF Instrument Flight Center, and Squadron Officer's School.

CAPT. THOMAS THELEN has seven years experience in the USAF with the past year in Southeast Asia as chief, Programs and Mobility. He was the focal point for maintenance aspects of the base contingency and operations plans including those for the evacuation of Americans from Cambodia and Vietnam and the rescue of the Mayaguez' crew.

Northrop Credit Union: Banker, Fr

Do Our Employees Like The Credit Union? You Bet!

CLYDE CORDER, Facilities Planning and Engineering, Ventura Division — "The payroll deduction feature of the Northrop Ventura Credit Union is especially appealing. Also, the insurance coverage provided with loans."

JEWEL JACKSON, Northrop Data Processing — "It's a good benefit for employees especially with the lower interest rates it offers. I've used it for several loans over the years and have found it a quick convenient service."

MARION REINHARDT, Product Planning, Electro-Mechanical Division — "I like the Credit Union better than a bank for saving. The interest is higher and payroll deduction makes it so easy you don't miss the money."

JOHN STRYKER, Manufacturing Engineering, Electro-Mechanical Division — "I like many things about the Credit Union. You can make fast withdrawals. Payback is painless through the payroll deduction plan."

ZELMA DAILY, Standard Tool, Aircraft Division — "When I became a widow a few years back, the Credit Union gave me much needed help in arranging loans enabling me to buy a car and household items so my son and I could get by. I strongly recommend the Credit Union."

LYNN DE LUCA, Graphics and Reproduction, Ventura Division — "Two major reasons why I am a confirmed Credit Union member are the "Ready Cash" along with the excellent service. When they say my check is ready, it really is and there is no waiting around."

LESLIE BREDE, microelectronic assembly technician, Electronics Division, Hawthorne — "I was able to get my home mortgage through the Credit Union, and also a car. The interest rate is lower than banks, and the payments come right out of my check. I also like the savings plan. I don't miss the money."

ADOLPHUS SMITH, data control requirement specialist, Electronics Division — "I like the convenience. With a VIP loan you can just call and the money is ready for you. The Credit Union has allowed me to do more things I like — such as horseback riding, and traveling. The payments are reasonable."

YOU — individually — would have had to spend a million dollars a year since the administration of President Andrew Jackson to equal the amount of money that has been loaned to Northrop employees by their Credit Union since it was formed 29 years ago.

Mary Delaney, treasurer and manager of the Northrop Credit Union at Hawthorne, said loans since 1946 total $141,150,000, and that more than $743,000,000 have passed in and out of the Credit Union in that time.

"In an ordinary month your Credit Union does more business than the average branch bank," Mrs. Delaney said. "Our charter permits us to serve any Northrop division or subsidiary. At the present time we serve the Aircraft, Electro-Mechanical and Electronics divisions, corporate office, some units of Northrop Services, Inc., Precision Products Department, Northrop Dakota, and recently added Wilcox Electric. Northrop Architectural Systems and Ventura Division operate separate Credit Unions."

The Northrop Credit Union was opened in 1946 primarily to aid employees who could not get bank loans. In the first month of operation 401 of the company's 4530 employees made deposits totalling $8993. The Credit Committee approved 31 loans amounting to $4219. In June 1975, the Credit Union's 15,565 members had $24,469,130 on deposit and new loans were running over 1100 a month with $19,938,112 in outstanding loans.

Walter T. Gage was the first secretary-treasurer manager. A former banker, he brought his expertise to the enterprise to create a professional banking operation. He served the Credit Union until 1965 when Mrs. Delaney became treasurer-manager.

"I first went to work for the Credit Union in 1948," she recalled. "We had three employees at that time. Now it takes 21 to keep us going."

Mrs. Delaney first joined Northrop in 1945 as a clerk typist. She had wanted to go into banking, but had been told that it wasn't a woman's field. She worked as a clerk typist until laid off in a reduction in force. Shortly after this she received a call, saying that her resume had shown experience in running a bookkeeping machine.

Very Little Experience

"I had only had three months of machine experience and didn't know anything about the kind of machine the Credit Union had. I told them so, but they said, 'Come and tryout anyway.' I did and I've been here ever since."

In the years that followed, she was promoted into increasingly responsible positions until she succeeded Gage in October 1965.

MARY DELANEY, Credit Union manager, and Loan Interviewer Vinnie Derus, left, ock men quarters in Hawthorne. Credit Union now has more than 15,000 members and is continually

,Friend-in-Need

THE CREDIT UNION helps Northrop people in many ways. Joe Noyes, director, Advanced Composites, Aircraft Division, financed his Navion airplane through the Credit Union and uses it to commute to Hawthorne from Orange County.

At that time the Credit Union had $3,600,000 in assets. In the 10 years she has managed the operations, assets have increased to $26,000,000.

"This is quite a jump," she said, "but it would not have been possible without the truly outstanding cooperation the Credit Union has received from Northrop as a whole, the corporation and its people. Also, the board of directors, credit committee, supervisory committee, staff and outlying facilities representatives.

The Credit Union is state chartered and each member account deposits are insured to maximum of $40,000 per account. Its basic purposes are to promote savings among employees and to provide low cost loans. "In most cases our loan rates are lower than one can get from other sources," Mrs. Delaney said. "There are other advantages. You don't have to take a day off from work to get a loan as you would from a bank. You pay back by convenient payroll deduction and are covered with Creditor Life Insurance at no cost to the borrower."

There is also an advantage to the borrower in case of layoffs. "Credit Unions, much more than a bank, can try to adjust to a borrower's problems in case of layoffs. We work with him to help keep the regular payments. This policy, coupled with the preferred type of people to whom we make loans, has kept our loss rate from 1946 to 1975 at only .3 of 1 per cent."

The Credit Union does not provide a checking service, but, except for this Mrs. Delaney said the Credit Union provides Northrop employees with just about all other services they could receive from any other financial institution. Deposits can be removed from the Credit Union on demand after an initial six months deposit without losing dividends. "We do ask that you limit withdrawals to one a month to relieve pressure on our small staff.

"All employees of Northrop and its subsidiaries can become members of the Credit Union," Mrs. Delaney said. "Retirees retain their membership. In a number of cases retirees who have received their savings plan payoffs put the money into the Credit Union to keep it earning for them. Also under certain conditions, terminated employees may retain a lifetime membership.

Welcome Any Size Account

"And we welcome a small account as much as a large one," she added. "The smallest account we ever had was an employee who began a $1 payroll deduction for Credit Union deposit when we first opened. He kept this up as long as he was with the company. Upon retirement his deposits, plus interest, had grown to $1000. Our largest deposit received was $40,000. While $20,000 is the maximum amount an individual can have on deposit, members of his family are also eligible for the same amount. And this deposit was a husband and wife account."

Return on deposits vary with profits made. All profits, except for expenses and a reserve account, are returned to depositors as dividends.

"The Credit Union has paid a dividend every year except for the first one," Mrs. Delaney said. "Our first dividend was paid in 1948 and was for 2 per cent. This was increased to 2½ per cent in 1956 and to 6¼ per cent in 1966. Our last dividend, paid on accounts of record as of May 31, 1975 was at an annual rate of 7 per cent and was credited to members' share accounts as of June 30, 1975."

Borrowers are now running around 1100 new accounts a month. The largest number is for unsecured personal loans. So far in 1975 these have totaled 4648 loans for a total value of $4,087,759. Automobile loans are second in number, but first in dollar value, with 3470 loans, worth $7,632,810. Trust deeds are second in dollar value at $4,399,734. Other types of loans include homeowner, trailer, airplane, stock, boats and recourse loans.

"Over the years we have financed babies, vacations, medical services, honeymoons, and in at least one case, we suspect the money went to feed the horses at Santa Anita. We are continually seeking new ways to expand our services. The latest permits retirees drawing social security to have their checks directly deposited in the Credit Union."

A Separate Corporation

The Credit Union is totally a separate corporation but a Northrop organization. The 21 employees are on the Northrop payroll. However, their salaries are reimbursed to the company by the Credit Union.

"The policies of the Credit Union are determined under state regulations by a board of directors and committees elected from Northrop organizations affiliated with us," Mrs. Delaney said. "At the present time people from the corporate office, Aircraft, Electro-Mechanical and Electronics divisions, and from Wilcox Electric, serve either on our board or on our committees."

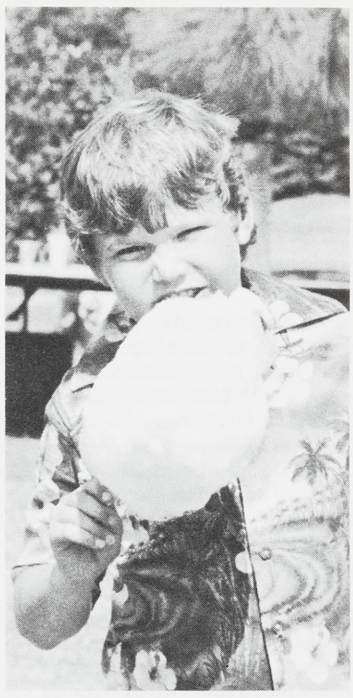
The 1975 president of the board of directors is R. M. "Dick" Shave of the Electro-Mechanical Division. Other members of the board are John J. Richardson, vice president, Mary Delaney, secretary-treasurer, Harvey L. Cook, L. L. Cripe, R. D. Hampton, R. A. Lindsey, B. M. Slotnick and Frank F. Forve.

The Credit Committee is composed of G. F. Kasson, chairperson, Peggy Faubion and W. H. Justice Jr. Committee alternates are D. R. Apodaca, R. L. Greetan, B. E. Hoffman, M. G. Peiffer, E. J. Regalado, E. W. Ross Jr., D. B. Wyatt and T. P. Brady.

A. W. Johnson is chairperson of the Supervisory Committee with S. D. Parr, E. R. Foord, T. A. Hruska and H. H. Sweet, members.

The office staff assisting Mrs. Delaney are Marv Peiffer, assistant treasurer, Peggy Faubion, supervisor, Nellie Boener, Vinnie Derus, Kathi Hunt, Sue Brandt, Ann Malone, Donnie McNeal, Edith Mennella, Gloria Orona, Elaine Pillar, Wilma Robinson, Denise Sandoval, Norma Thomas, Helen Walker, Jane Weisheitinger, Frances Warga and Susan Weidensohler.

s, left, ck membership file at Credit Union head-
d is continually seeking ways to expand services.

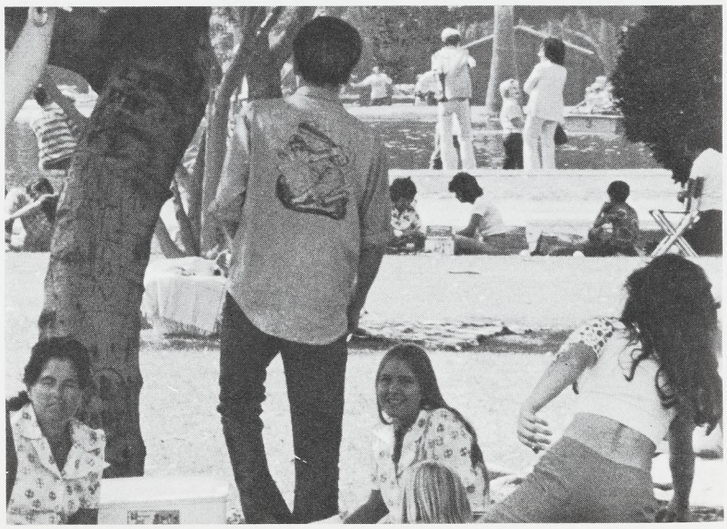


Northrop Family Picnic At Knott's Berry Farm

An enthusiastic crowd of employees and their families from throughout the Southern California operations enjoyed the Northrop Family Picnic and Fun Weekend at Knott's Berry Farm thanks to the behind-the-scenes work of the picnic committee.

Phil Sherman, NRC special events chairman, headed the volunteer group and noted, "The Knott's picnic was a fantastic success just as it was planned. More than 7000 Northrop employees and their families enjoyed the festivities of the Northrop picnic.

"A special thanks to Bill Lewis, Dave Carney, Marv Shirley, Bill Hayman, Rosalie Smith, Jim Jones, Gene Boggess, Fred Armstrong and Lois Paris who were the committee chairmen," Sherman added. (Photos by John Lawrence)



Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Porsche 914, 1972, 1.7 litres, 5-spd., removable top & cover, only 27,000 mi., $4500. 213-354-4742, 213-248-9650.

Ford, 1973 Grand Torino wagon, 24,000 mi., a/c, p/s, p/b, $3200. 213-679-6828.

Motorcycle, Honda CB 350, 2 helmets, 7000 mi., $1000. 213-324-7869.

Motorcycle, 1975 Yamaha YZ80, 500 cc, 5-spd., dirt, $380. 213-644-6927, 213-676-2694.

Motorcycle, 1972 Yamaha 250, dirt, $400. 213-675-8694.

Plymouth, 1970 Sport Suburban wagon, a/t, p/s, p/b, a/c, 4-dr., 2-seat, incl. trailer tow pkg. & EZ lift hitch, $1350. 714-544-7349.

Buick, 1963 Special, V6, $200. 213-644-3249.

Capri, 1974, orig. owner, V6, AM/FM, $3850. 213-421-7416.

Toyota, 1974 Land Cruiser, 4 w.d., $4500. 213-427-8559.

Toyota, 1972 Corona Mk II, 4-dr. sedan, fact. air, eng. partially reblt., shocks, (rear) adjustable (front) both new, 8" e.t. mags. w/D-60x13 tires, $2100. 714-556-3881.

Motorcycle, Honda MT-250, 1973, extras, $600. 213-541-3000.

Datsun 1200, 1973, $2000. 714-860-6773.

Motorcycle, 1973 Kawasaki 750cc, many extras, $1075. 213-542-0296.

MGB, 1974, 1200 mi., deluxe radio, stereo spkrs., soft top, 4-spd., $4985. 213-342-7337.

Pinto, 1974 wagon, 4-spd., mags, radials, $2899. 213-541-8189.

T-Bird, 1965, $150. 213-439-6159.

Pontiac, 1973 Lemans, AM-FM, a/c, p/b, p/s, low mi., $3000. 213-372-3589.

Gremlin, 1972, low mileage, $1595. 213-329-9809.

Pickup, 1971 Toyota HiLux, ½-ton, $1500. 213-860-2948.

AMX, 1968, 4-spd., .14 rear tires & .10 front, U.S. slots, $2000. 213-376-1964.

Chevelle SS, 1964 302 Z28 eng., 300 mi. since reblt., 13½-1 Arias pistons, 4-spd., $650. 213-378-4390.

Motorcycle, 1970 Harley Davidson Sportster, $1700. 213-375-7303.

Ford, 1973 Pinto wagon, a/t, mag. whls. & tires, $2600 or $300 & take over pymts. 213-676-5955.

Motorcycle, Honda 350CB, saddle bags, b/rest & lug. rack, 9950 mi., $875. 213-454-2561.

Motorcycles, 1970 Suzuki TS 90 Enduro, 1900 mi., $282; CZ Motocross, 1967, stock, extras, $399. 213-889-5481.

Camper Van, 1969 Dodge, a/t, a/c, 12 V. ref., $2995. 805-492-2117.

Datsun, 1974 260Z, a/c, mags, AM-FM, $5800. 213-372-4593.

Motorcycles, Yamaha, 1973s, 250 Enduro, $550; 500 MX, $695. 213-530-7539.

Motorcycle, Yamaha, 1969, 250 Enduro, dirt, street access., $350. 714-821-7958.

Motorcycle, Sachs, 1965, dirt, 100cc, plastic tank & fenders, $250; Buick, 1970 Riviera, a/c, AM-FM stereo, rallye whls., full pwr., $1875. 213-329-4090.

Dodge Monaco, 1972, $2150; motorcycle, Honda, 1973 SL-100, low mi., $385. 213-541-6476.

Motorcycle, 1972 Gemini 50MX, $75. 213-673-3109.

Buick, 1972 Estate wagon, air, full power, AM-FM, $2800. 213-546-1018.

Chrysler 300, 1963, $350. 213-377-3008.

Dodge, 1971 1-ton van, full power, air, low miles, $2850. 213-323-6949.

Honda 600, 1971 2-dr. sedan, new Michelin tires, clutch & dr. train, $1200. 805-497-4187.

Dodge, 1974, ½-ton van, paneling, carpet, high-back seats, ice box, mag whls., $5500. 213-370-8229.

Miscellaneous For Sale

Camping Equip., 9x12 tent, stove, Coleman 2-burner, lantern, Coleman 2-mantle, 2 sleeping bags, $150. 213-674-8669.

Love Seat, new throw cover, $10, davenport, brown naugahyde, $75. 213-644-3249.

Chord Organ, Estey, w/bench, $80. 714-821-4629.

Dining Room Table, ext. leaf, 6 matching chairs, white w/cushioned seats, $200; tape player, 7" reel-to-reel, $100; chest & bedside tables, maple, $50. 213-532-2610.

Dog, Sheltie, male, AKC, 2 yrs. old, $50. 714-846-9445.

Telescope, adjust. tripod, 15, 30, 45, 60 x 60mm Achromatic lens, $30. 213-757-8644.

Roll-A-Away Bed, $25. 213-679-7746.

Washing Machine, Whirlpool, 18 lbs., $150. 213-671-6813.

Wheels, 6 14", chrome, 7" & 8" rim widths, $80. 213-654-9231.

Dinette Set, Virtue Brothers, table w/leaf, 6 chairs, $30. 213-430-8378.

Truck Engine, 1969 360 Ford, complete, $200. 213-370-6178.

Slide Projector, Golde 35mm, w/case, 300 w. bulb, $30. 213-377-4198.

Bed, mattress, box springs, angle frame, & vinyl h/board, 2½ yrs. old, full size, $60. 213-673-4890.

Sofa, 9', matching love seat, chair & coffee table, $99. 213-832-3129.

Bar Stools, 2, custom-made, swivel, high chrome backs, blue wet leather cushions, $70. 213-392-2336.

Pool Table, 3½'x7' & equipment, $70. 213-377-2631.

Touring Bike, 5-spd., handbrakes, carrying rack, $60. 714-897-5134.

Skiff, 8', fiberglass, near new, mahogany trim, oars, $150. 213-377-1074.

Ski Boat, 1975 Calif. Coronado, 18', 455 Olds jet dr., 10 hrs. on eng. $5461. 714-554-4190.

Ring, men's, Tiffany mounted white gold nugget style, blue-white ¼ carat dia., $300. 213-655-3427.

Mags, set, American spoke, 16" w/Firestone Indy tires, 12x16, $75. 213-378-4390.

Dog, Staffordshire bull terrier, female, spayed, $100. 213-370-9119.

Radiator & fuel pump, in unopened cartons, Sears, for 1954 BelAir Chev., $90. 213-675-2422.

Clarinet, b-flat, La Sete ebony, $75. 213-323-8089.

Garden Shed, 6x8, 6 mos. old, Sears, complete w/floor, shelves & window, $175. 714-846-4325.

Headers, for Ford 351c, $60; Holley 2v carb., 500 cfm, $30; transmission, Ford, 3-spd. stick, $100. 213-329-9944.

Camera, Petri, 36mm, electronic flash, light meter & tripod, $55. 213-322-2364.

Yearling Filly, reg., grey, half-Arabian, $300. 213-336-9762.

Guitar, Crown, western style, med. size, $60. 213-765-8701.

Accordion, Sonata, 120 bass, $550; range, 30" elec. Kenmore, $50; lawnmower, Klipper Cooper, 18", 4-cy., $25. 213-423-2901.

Clarinet, Yamaha w/case, $130. 213-370-2137.

CB Radio, mobile 23-channel, Pace 223 w/thunderstick ant., coax, bumper mount, 3" spring, $150. 213-371-4506.

Pups, English pointer, reg., shots, wormed, 7 males, 2 females, $100 ea. 213-899-5183.

Roll-A-Way Bed, $25. 213-540-7221.

Windows, 5, trailer or boat, fixed, $10; lazy susan, painted wood, $5; water pick, $10. 213-320-8297.

TV Antenna, color, unopened, $17. 213-941-1865.

Welsh Pony, 13.2 hands, white w/black head, est. 8-10 yrs. old, $450. 213-325-3404.

Model Trains, N ga., & layout, $35. 213-329-4090.

Clarinet, E flat, Bundy, $85; poker table, full size, 8 sides, felt top, $50. 714-544-7319.

Wall Mirror, 3'x4', $35; painting, seascape, 3'x4', $25; rotisserie, Farberware Open Hearth, $40. 213-675-1000.

Hide-A-Bed, queen size, Herculon reuphol., $200; chest, 4-drwr., $75; head, for '56 Olds, $20. 213-863-3758.

Camper Shell, custom blt., dble. drs. $300. 213-892-1415.

Guitar, fender elec. & amplifier, $150. 213-831-6567.

Honor Is Its Own Reward

Northrop Plant Protection managers and investigators are convinced that 99 per cent of all Northrop employees are honest and trustworthy.

Howard Virgin, manager, Plant Protection, Aircraft Division, stated, most people are extremely conscious of right and wrong. Some of those who become involved in wrong-doing suffer immeasurably before their conscience is cleared.

Recently a former employee wrote the following letter to Northrop (paraphrased so as not to reveal the name):

I worked at Northrop for several years in the early 1960's.

During this time I took several things which belonged to the company. I have been convinced it was wrong and know I should do something to make it right.

Perhaps this is more a bother than a help, but I am mailing a package of that material back to you. I am also enclosing my personal check to cover the cost of other things which have long since been used or discarded.

I ask your forgiveness for not having been a faithful and trustworthy employee.

Virgin said Plant Protection often receives Northrop property mailed in by conscious-stricken employees. The property is then returned to company use.

Miscellaneous For Sale

Refrigerator, Coldspot, copper, $30. 213-973-4452.

Piano, Kimball consolette, red maple, $685. 714-842-5968.

Organ, German pump-type, 147 yrs. old, $450. 213-324-2130.

Auto Radio, AM pushbutton transistor, from 1971 Chev. Monte Carlo, $25. 213-371-2258.

Firewood, fireplace length, your choice of any diameter up to 8" 25¢ per log. 213-886-6814.

Piano, spinet, cherry wood, Hobart M. Cable, $650. 213-943-3516.

Headers, Hedman, for any car, won in contest, $75. 213-645-7715.

Tent Trailer, Nimrod, sleeps 6, bltin kit. & storage, 7000 btu htr., awning, $925. 213-323-7171.

Sofa & love seat, gold, crushed velvet, 6 mos. old, $145; living room chairs, pr., avocado green, $45; chairs, pr. aqua uphol., $40. 213-778-7594.

Wanted To Buy

Washing Machine, good, used. 213-539-2487.

Wanted to buy carburetor, 6v., to fit std. Volkswagen 1300 eng., in good condition, or will trade Holley 2-bbl. bug spray carburetor. 213-375-8536.

Hair Rollers, elec. need 5-10. 213-973-7445.

Golf Clubs, left-handed, good condition. 213-370-1479.

Boat, Sabot, fibreglass, complete. 714-544-7319.

Studebaker, 1962-64 Lark or Daytona, clean body a must, mechanical condition incidental. 213-422-3932.

Surfboard, 6½-7'. 213-323-2234.

Piano, any condition. 714-524-6302.

For Sale Or Trade

Motorcycle, 1970 Bultaco 250, new seat, top end, clutch & tires, $325 or trade for 350 Honda. 213-630-3888.

Organ, Hammond, mod. R100, 2 yrs. old, $2000 or trade for Chev. pickup on Camaro. 213-371-3396.

Rentals Wanted

House, small 2-bdrm., w/utility area, in the Hawthorne, Torrance or beach area. 213-973-1902.

Want to share house, 2-bdrm., convenient to Northrop, $130 mo. 213-673-0195.

Engineer wanted to share Palos Verdes hilltop home, pool, $225 per mo. 213-541-3844.

Lost

Dog, lge. wiry, reddish dk. brown, male, white chest & feet, answers to sunny, leather collar & tags, Hermosa area, reward. 213-379-3485.

Found

Prescription Glasses, pr. black frames, not bifocal, found on file cabinet near Col. L-8, 2nd flr., Engineering Science Center, in Orgn. 3542, call ext. 5035.

Personals

Many thanks to all who contributed so generously to my retirement party. We wish to extend a warm welcome to all our friends to visit a while when up north. RUSSELL & BERTHA WOOLF.

Thanks to all the nice people at Northrop for the great retirement party & gifts. RUTH GELLER.

In fond memory of Wood Jones, the family & his many friends wish to express sincere appreciation for the warm response of sympathy, cards, & flowers at his sudden passing. GUERIN & SCOTT JONES, MRS. DUCKWORTH & MRS. LACKEY.

Many thanks to all my Northrop co-workers & friends for their wonderful gifts, cards & prayers during my illness. ALICE HARRISON.

I wish to thank my friends at Northrop for the flowers, sympathy & kindness expressed during the loss of my mother. KEN DYLA.

We want to express our deep appreciation to Jud's many friends at Northrop for the cards of cheer during his illness & we gratefully thank you for the beautiful flowers at his recent passing. BETTY RENN & FAMILY.

My family & I are grateful for your kindness to us during the death of my father. RAY G. SAAVEDRA.

We wish to express our appreciation to everyone for their kindness & thoughtfulness during the illness & loss of our husband & father. MRS. BEN DONNELLY & FAMILY.

Free

Sheep Dog, white, to family w/children. 213-542-0296.

Kittens, 213-927-0678.

Kittens, some Manx. 213-644-5348.

Northrop News

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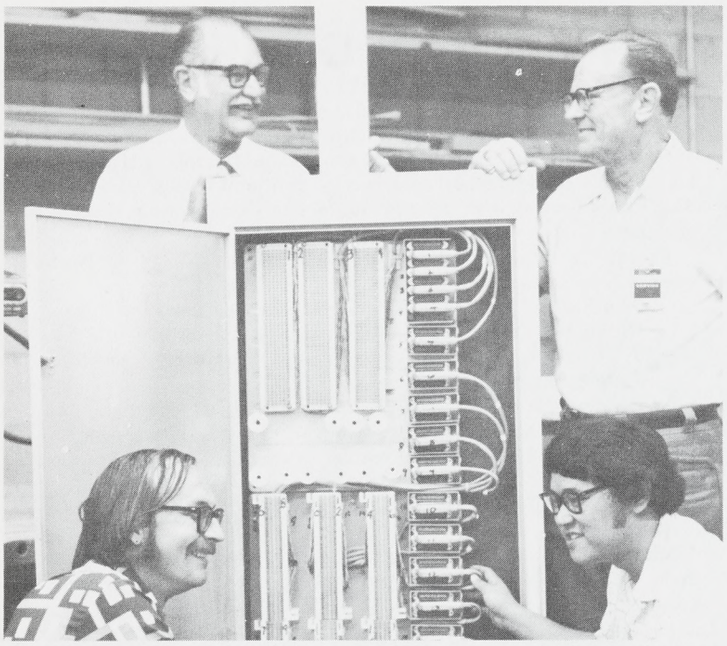

MODULAR PHONE SETUP, now in use at Electronics Division's Hawthorne facility, was designed through joint effort of Phil Engels, standing, left, Facilities Engineering and Communications Unit, and Pacific Telephone experts. Movable "Modular Terminal Backboard" adjusts to fit major office arrangement changes "giving us a more flexible communications system," Engels said. Shown with Engels are Jim Andrews, standing, right, Pacific Telephone installation foreman, along with Mike Flint, lower left, and Carl Hashimoto, telephone company PBX installers.

Frieda Mooring Celebrates Her 35th Year With Northrop

Frieda Mooring, administrative accountant, Palos Verdes, became the first Electronics Division employee and first woman at Northrop to observe her 35th anniversary with the company to highlight service awards for October.

Frieda Mooring

Four employees observe their 25th anniversaries this month: Dean Burch, Christopher Moyer, Tony Santaella and Stephen Finnegan, all of the Hawthorne facility.

Frieda, in a Northrop News interview article last October, recalled working 10-hour work days, six days a week during World War II, and how carpooling then was a way of life as well as rationing of gas and meat.

"If I had it to do all over again, I would still choose to be a career woman at Northrop," she said in the interview.

Other October service awards are: 20 years — Helen Gantt, Bill Fryer, Mary Diel and Anthony Musuraca, Hawthorne;

15 years — Larry Beuder, Kay Smith, Shayle Meyers and Robert Bonney, Hawthorne; and Edmund Powell, Palos Verdes; 10 years — Chuck Niles, Palos Verdes.

Precision Craftsmanship at Division

PRECISION CRAFTSMANSHIP is exhibited by Al Blanco, supervisor-Precision Lapping Laboratory. Shown here in photo similar to that used as cover for Northrop's six-month report to shareholders, Blanco measures equatorial rings used in Advanced Inertial Reference Sphere (AIRS). Technology from this system is being used in design and development of advanced inertial reference unit for the Air Force's MX Technology Program under a contract awarded last May.

NRC Calendar

Las Vegas Night

A winner every hour and you might be one! That is if you come to NRC Las Vegas Night, Friday, Nov. 7, 7 p.m.-midnight at the NRC Clubhouse. Tickets are $1 presale and $1.50 at the door. Entertainment and refreshments will be provided all evening long.

Halloween Party

The Northrop Ski Club has scheduled a Halloween "Kick Off" party Friday, Oct. 31, 8:30 p.m.-1:30 a.m. The "Spooks" will gather at Lococo's in Manhattan Beach. There will be dancing, plenty hors d'oeuvres and prizes for the most unusual, humorous and best couple costumes. Price is $3.75 or $4.25 at the door. Contact Rosa Metzler, Aircraft Division ext. 3666.

Skin and Scuba Diving

The NRC Skin and Scuba Diving Club will go boat diving off San Clemente Island, Saturday, Oct. 25, departing at 2 a.m., aboard the Westerly from 22nd St. Landing, San Pedro. Cost is $26 per person for members, $30 non-members. Divers provide their own diving equipment, transportation to the boat, food and beverage. Reservations should be made by Oct. 20.

An NRC Skin and Scuba Diving Club meeting is scheduled for Oct. 31, 6 p.m., at the NRC Clubhouse. Contact Jacob Ramon, Aircraft Division ext. 4898 for information.

Arts and Crafts Show

The second annual NRC Arts and Crafts Show will be held at the NRC Clubhouse, Saturday, Nov. 22 and Sunday, Nov. 23. Hours are from 10 a.m.-4 p.m. The show provides employees, their families and the community an opportunity to view, appreciate and perhaps purchase a variety of arts and crafts which are made by skilled Northrop artisans. Contact Bill Hayman, publicity chairman, Northrop Data Processing, ext. 5350.

Key Milestones Attained In Wire Memory Effort

Two major milestones have been attained in the Electronics Division's Miniature Wire Hardened Memory (MWHM) program with proof testing of the first unit, and assembly of the second.

Since the program began in July 1973, Northrop personnel at Palos Verdes have succeeded in producing a plated wire memory weighing 1.7 lbs. and measuring 36.4 cubic inches. The effort, being conducted under an Air Force Materials Lab (AFML) contract as part of an overall SAMSO program, is to demonstrate new manufacturing methods and techniques applicable to production of a micro-packaged plated wire memory.

Key Objective

A key program objective has been a significant reduction in weight and volume of plated wire memories, along with hardness to nuclear radiation, said Ernst "Ernie" Brandi, project engineer. Potential applications of the MWHM include incorporation in guidance system computers of U. S. Air Force and Navy advanced strategic technology programs, satellite programs and space probes.

Ron Johnson, staff memory engineer, was active in design of the miniature plated wire memory, along with Harry Palola who was instrumental in the mechanical design. Others who played important roles in the program's success were: John Williamson, Bob Gillingham, Keane Hamilton, Davor Bozin, Clay Enoch, Dick Washabaugh and Jack Raquet.

Proof testing of the first unit consisted of demonstrating operation in an environment including temperature extremes and missile reentry levels of shock and vibration. Subsequent testing will expose the memory in various radiation simulator facilities to demonstrate radiation-hardened qualities.

Packaging Miniaturized

Key to making the system smaller has been in miniaturization of packaging, using BLIP — Northrop's registered Beam Lead Interconnect Packaging technique — and the use of 2.5 mil diameter memory wire which is plated by Northrop. There are 13 different types of hybrid packages (BLIPs) and a total of 122 hybrids per memory subsystem.

Jack Garrett, Manufacturing Technology Division of AFML is the technical monitor for the program and Lt. Don Harbert is the technical consultant for SAMSO/ABRES.

BREAKTHROUGH IN weight and size of Miniature Wire Hardened Memory (MWHM) is demonstrated as Ernie Brandi, project engineer, weighs 1.7 lb. unit. Major milestones have been achieved recently in this important program, in joint effort by Electronics Division, AFML and SAMSO. (Photo by John Lewis)

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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Senate Endorses F-18 Program

The United States Navy/Marine Corps F-18 passed its last legislative hurdle Friday, Nov. 14, when the Senate overwhelmingly endorsed funding of $132.7 million to initiate full-scale development.

Thomas V. Jones, president and chief executive officer, in a message to all employees following the Senate vote, said, "The overwhelming 64 to 19 vote in the Senate once again underscores the soundness of the selection of the F-18 by the Navy and the Marine Corps and the Department of Defense. The confidence expressed in us by our customers and the Congress is founded on the reputation and record of performance of the Northrop/McDonnell Douglas — General Electric team."

Senate endorsement came after the U.S. House of Representatives approved F-18 funding last month. Legislative endorsement followed selection of the F-18 by Navy, Marine Corps and Department of Defense officials.

HONORED FOR SERVICE, Frieda Mooring, senior Electronics Division employee and first woman in Northrop to observe 35th anniversary, receives pin from David N. Ferguson, corporate vice president and division general manager. Frieda, administrative accountant, has 'no plans to retire yet,' and still enjoys her job.

Children's Christmas Party Set

The 35th annual Christmas party, presented by the Electronics Division NRC is scheduled for Sunday, Dec. 14 at Leuzinger High School, 4118 W. Rosecrans, Lawndale. The doors to the auditorium will open at noon and the show will start at 12:30.

This year's party for all children (12 years and under) of Electronics Division employees, will feature Disneyland cartoons, clowns and — of course — Santa Claus with his bag of gifts.

Ticket reservation forms will be made available to employees soon through the Payroll Dept. NRC reminds employees to reserve early, so that children can participate in "true Christmas spirit."

MX, Avionics Teams Relocate

In a major shift, some 170 Electronics Division members of the MX Programs Dept. have moved to the Hawthorne facility from Palos Verdes. At the same time, approximately 150 Avionics Dept. employees have moved from the Hawthorne facility "up the hill."

The shift to the new offices was made over the weekend of Nov. 1-2. Three laboratories were relocated from PV to Hawthorne and two Avionics labs were moved from Hawthorne to PV.

"Generally speaking, the move went as smoothly as possible considering the number of people involved," said H. L. Janssen, manager, Division Relations and Services.

The MX Programs Dept., headed by George Fritzel, is involved in design and development of an inertial guidance unit for the USAF's Advanced ICBM Technology Program (MX) under a $32 million contract received last May. The three-year program is set up in three phases — design, fabrication and test. The program, six months underway, has now moved into the in-

(See MAJOR MOVE, page 12)

★ News Briefs ★

Senate Endorses F-18 Program

The U. S. Senate overwhelmingly endorsed funding of $132.7 million to initiate full-scale development of the U. S. Navy/Marine Corps F-18 Air Combat Fighter, which will be produced jointly by Northrop and McDonnell Douglas. The new Navy program will involve some 11,000 jobs in California, including those at the Southern California facilities of Northrop and its network of several thousand suppliers.

Northrop Reports Record Third Quarter Earnings

Earnings for the third quarter of 1975 were the highest in Northrop's history, Thomas V. Jones, president and chief executive officer, has announced. Net income for the quarter ending Sept. 30, was $7.2 million, an increase of 44 per cent over the $5 million recorded for the third quarter of 1974. Third quarter sales amounted to $245.8 million as compared with $210.5 million for the same period a year ago, an increase of 16.8 per cent. Earnings for the third quarter were equivalent to $1.90 per primary share versus $1.36 for the comparable period of 1974, or an increase of 39.7 per cent. "The figures reflect the continuing upward trend of the company's sales and earnings performance," Mr. Jones said.

CASA Contract to Aircraft Division

Construcciones Aeronauticas S. A. (CASA) of Spain has contracted with the Aircraft Division for consulting support during the design, manufacturing and testing of a prototype C-101 trainer/light attack aircraft being developed for the Spanish Air Force. The C-101 will perform as a basic and advanced trainer with air-to-air and air-to-ground weapons delivery capability. CASA is a Northrop affiliate.

PPD Holds Groundbreaking Ceremonies

Joseph Yamron, PPD vice president and manager, welcomed guests from Northrop, the Town of Norwood and Carlson Construction Corporation before beginning groundbreaking ceremonies for the construction of the Precision Products Department's new facility.

NSI Opens New Microbiological Lab

Northrop Services, Inc. (NSI), held formal opening ceremonies of its new microbiological laboratory at Little Rock, Ark., with Arkansas Lt. Governor Joe Purcell and Dr. Morris F. Cranmer, director, National Center for Toxicological Research, in attendance. Main purpose of the laboratory is to determine through animal tests the adverse effects of low-dose long-term exposure to chemical toxicants or poisons.

425th TFTS F-5Es Win Commander's Trophy

The 425th Tactical Fighter Training Squadron, Williams Air Force Base, Ariz., won the first annual 58th Tactical Fighter Training Wing Commander's Trophy for sustained excellence in air-to-surface gunnery over a one-year period. Flying F-5Es, the 425th won four of the monthly Turkey Shoot meets and finished second in three others. The F-5Es took the measure of F-104, F-4 and F-15 squadrons.

PPD Receives Follow-On Contract

Precision Products Department (PPD) recently received a follow-on contract from Raytheon Corporation to build 45 G1-G6 rate integrating gyros.

Bicentennial Flag Raising

FLYING HIGH ARE the U.S. and Bicentennial flags from the new Ventura Division Bicentennial flagpole dedicated Nov. 11. Thousand Oaks High School color guard garbed in authentic Minuteman costumes is shown securing the flagpole lanyard. From left are Chris Buhr, Eric Frokjer and Keith Swanson. The Thousand Oaks High School band furnished music with a Bicentennial theme with W. E. Woolwine, Ventura Division general manager, providing dedicatory remarks. (Bob Thornton Photo)

Northrop Newsmakers

• **D. T. REYNOLDS,** Ventura Division, presented a paper on "Stress Analysis of Ribbon Parachutes" at the recent AIAA Aerodynamics Deceleration Systems Conference in Albuquerque, N.M. The paper was co-authored by Reynolds and Ventura's **W. M. MULLINS.**

• **G. B. DOYLE,** vice president, Manufacturing, and assistant general manager, Aircraft Division, presented the first 35-year service awards to Palmdale employees **JOHN VILARINO** and **JACK HENDRICKS.**

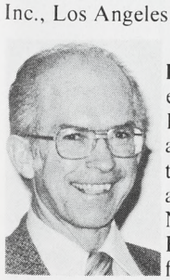
• **CAROLE DINNEN,** Management Systems, Electro-Mechanical Division, will be on loan to the United Way of Orange County for 30 days as part of the executive loan program. She will assist the charitable organization in its annual fund drive.

P. J. Everts

• **P. J. EVERTS,** coordinator, Civil Affairs, corporate office, has volunteered for a three-month, full-time assignment as a loaned executive in the 1976 United Crusade campaign.

• **DUKE JONES,** Manufacturing Liaison coordinator, Aircraft Division, finished second in the national Cyclone Sailboating Championships, Sept. 27-28, at Marina del Rey, Calif. Jones piloted his 13-foot long Cyclone over a four-mile Olympic course.

• **DRS. FREDMAN J. WALCOTT JR.** and **G. HAROLD KLEIN** are new members of the Ventura Division's Technical Management operation. Walcott formerly was manager of Marine Engineering for Aerojet Electrosystems, Azusa, while Klein was a research scientist with Mellonics Research, Inc., Los Angeles.



Mark Anderson

• **MARK ANDERSON,** senior engineer, Aircraft Division, was awarded a certificate and $50 award from NASA's Ames Research Center for a Tech Brief he provided dealing with a heart-rate pulse-shift doppler for use in the Space Lab program.

Nils Johnson

• **NILS E. JOHNSON,** director, Employee Relations, Electronics Division, has been appointed director, Industrial and Community Relations, Page Communications Engineers, Inc., wholly owned Northrop subsidiary in Vienna, Va.

• **DR. CHARLES DENOVA,** Aircraft Division Training Section, and **GIOVANNI BARGERO,** USAF AFPRO, Hawthorne, have been honored by St. Jude Children's Research Hospital for their volunteer work as area chairmen for fund-raising during the recent Walk/Bike-A-Thon in Southern California.

• **FRANK P. TIPTON,** assistant to the general manager, Ventura Division, will be a guest lecturer at California Lutheran College, Thousand Oaks, during the first week in December. Tipton will speak on contracting methods and procedures used in dealing with the federal government to **DR. BARTHOLD SORGE'S** class in introduction to the environment of business.

• **DAVID R. APODACA,** engineering specialist, Aircraft Division, will lecture at Cal-Poly, San Luis Obispo, Nov. 20. Apodaca, who has lectured frequently at the university over the past 15 years, will discuss "Materials for Advanced Aircraft."

Art Eckel

Joe Saline

• In two major personnel changes at the Electro-Mechanical Division, **ART ECKEL,** former manager, Production Fabrication and Electronic Assembly, became manager, Manufacturing and Industrial Engineering. He was succeeded in his old job by **JOE SALINE.**

• **PATRICIA ANDREN,** administrative accountant, Aircraft Division, was awarded a University of California professional designation certificate in government contract management.

• **F. W. LLOYD,** senior vice president, Operations, was named Industrialist of the Year by the Los Angeles Chapter of the Society of Manufacturing Engineers. He was honored for his outstanding contributions to the professional engineering community, industry and education.

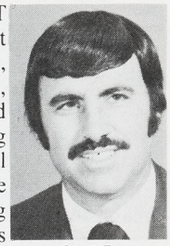
• **W. E. GASICH,** Aircraft Division general manager, served on the host committee of the Buck Rogers Banquet, Nov. 7, sponsored by the Los Angeles Section of the American Institute of Aeronautics and Astronautics. The banquet was a tribute to the scientists and aerospace pioneers who have turned science fiction dreams into reality during the 40 years since the first Buck Rogers radio broadcast in 1935.

• Two community-minded Northrop employees have been elected to the board of directors of a couple of United Way-member agencies. **R. J. "DAVE" DAVIDSON,** director, Corporate Administrative Services, is serving for the 1975-76 term on the board of the Los Angeles Urban League, and **ROBERT MC DERMOTT,** manager, Aircraft Division Employee Relations Services, is volunteering his time on the board of the Centinela Valley YMCA.

• Security administrators from Northrop's various divisions and subsidiaries convened at the Aircraft Division recently. In attendance were: **TERRY CLARK,** Wilcox Electric; **EIVEN SUNDE,** Page Communications Engineers; **BUCK PENNINGTON** and **BOB KELLER,** Electronics Division; **BOB FOX,** corporate security officer; **CHUCK SIMMERS,** Ventura Division; **JEANNIE ADAMS,** Northrop Research and Technology Center; **JACK BRUCE,** corporate vice president, Industrial Relations; **JOHN BURKE** and **NORMA SCHRUMPF,** Electro-Mechanical Division; **GERRY GARTLAND, ROGER SOUCY** and **GENE JESSICK,** Aircraft Division.

• **CAPT. IRA N. SCHWARZ,** commander, Pacific Missile Test Center (PMTC), Pt. Mugu, and **ARTHUR POMATTI,** acting deputy director, Range and Targets, PMTC, visited the Ventura Division on Oct. 15. They were briefed on division programs with PMTC and later toured the facility as guests of **GENERAL MANAGER W. E. WOOLWINE.**

• **LANGSTON D. GILLUM,** EEO coordinator for Northrop Services, Inc., Houston, attended the semi-annual General Industrial Cluster meeting at Prairie View (Texas) A&M University. The meeting was a planning session for the Cluster program which helps place university students in co-op jobs with local firms.



Scott Egan

• **SCOTT EGAN,** flight manual writer, Aircraft Division, has been appointed to the City of Long Beach Regional Arts Council. He has been in Long Beach civic affairs since 1968 and is a member of the Long Beach Bicentennial Steering Committee.

• **COL. JOSEPH P. PEPE,** U.S. Army (ret.) has joined the Ventura Division as program director of the Chukar Target operations at White Sands Missile Range, N.M. Colonel Pepe is a U.S. Military Academy graduate and served 29 years in the Army. Continuing as manager of Flight Operations is **KEN JOHNSON.**

• **HAROLD BEADLE, FRANK CARAMELLI** and **HERB STARK,** Electronics Division, are attending the Managerial Policy Institute 1975-76, of the School of Business Administration, at the University of Southern California.

• **DICK MOROZOWICZ,** senior engineer, Aircraft Division, will present a paper at the Conference on Aerospace Transparent Materials and Enclosures, Nov. 19, in Atlanta, Ga.

• **MERRILL E. SKILLING,** Electro-Mechanical Division chief plant engineer, has been appointed to a civic committee to study the feasibility of creating the city of Anaheim's first utilities commission.

• **JACK BRUCE,** corporate vice president, Industrial Relations, presented a paper, "True Cost Effectiveness Analysis for an Employee Assistance Program," to the sixth annual conference of the Association of Labor-Management Administrators and Consultants on Alcoholism held in Atlanta, Ga., this month.

Sarann Kruse

• **SARANN KRUSE,** safety engineer, Aircraft Division, was elected to the executive board of the Aerospace Section of the National Safety Council at the recent 1975 National Safety Congress and Exposition held in Chicago. She discussed the Northrop approach to safety in a lecture entitled "The Northrop Way."

Northrop Earns Award For Alcoholism Program

Northrop has been awarded the 1975 Thomas P. Pike Industrial Award for outstanding contributions in the field of industrial alcoholism programs. The Alcoholism Council of Greater Los Angeles presents the award annually.

Accepting the award on behalf of Northrop was Thomas V. Jones, president and chief executive officer. Speaking before the council, Mr. Jones said, "On behalf of Northrop Corporation it gives me great pleasure to be here today to accept this award for our efforts in an area which I feel is of vital importance to our community and the nation as a whole. All of us here are concerned about saving that most precious of all our national resources — the creative capability and initiative of individual men and women. Alcoholism wastes that resource. It is the responsibility of all of us, through rehabilitation, and more important, prevention, to retain that national asset."

Presentation

Making the presentation was Thomas P. Pike, vice chairman of the board of directors, Fluor Corporation, and chairman of the National Council on Alcoholism. Pike is considered to be the original architect of industrial alcoholism programs.

Pike expressed the council's gratitude to Northrop for the contributions made by John H. Bruce, corporate vice president, Industrial Relations, who serves on the Los Angeles Council's board of directors; Dr. Richard J. Krebsbach, corporate medical director, and a member of the South Bay Alcoholism Council; and Duncan Thomas, who originated and helped establish the current Northrop program.

Program Initiated

The Northrop alcoholism program was formed in 1973 under the direction of Dr. Krebsbach. Duncan Thomas initiated the Employee Counseling Program. It was established to supplement existing Employee Benefit Programs to assure maximum effort in assisting employees with alcohol and drug problems. Ed Furtado administers the program.

Dr. Krebsbach said, "We are fortunate in having Ed Furtado, a recovered alcoholic, on our staff. His background and experience help him counsel the troubled employee."

Furtado noted the program has enjoyed a high rate of success due to the cooperation afforded by all levels of Northrop management. "Of the 325 employees we have counseled confidentially in these first two years, approximately 80 per cent of them were referred to us by their supervisors or managers," he said.

The Employee Counseling Organization is available to all employees throughout the Southern California facilities.

"We are very grateful for the help that is given to us by recovered alcoholics and former drug users in the program who assist us with many volunteer hours," Furtado said.

Counselors Do Not Treat

The employee counselors do not treat but only determine the nature and extent of a particular problem and then refer those people needing help to outside agencies such as rehabilitation hospitals, Alcoholics Anonymous, and marital or family counselors.

"Our message is clear," Furtado stressed. "Employees have to take the first step towards rehabilitation. The company's policy and that of our insurance carrier is that alcoholism and drug dependency are considered to be treatable diseases. If the employee does participate in a program of rehabilitation, he or she will be eligible to receive the same considerations and applicable benefits as employees having any other illness."

ACCEPTING THOMAS P. PIKE award on behalf of Northrop is Thomas V. Jones, right, president and chief executive officer, during awards luncheon of the Alcoholism Council of Greater Los Angeles. The award, which recognizes the outstanding alcoholism program in industry, was presented by its namesake, Thomas P. Pike.

THOMAS P. PIKE, left, pioneer in the design of industrial alcoholism programs, congratulates Northrop alcoholism program architect Duncan Thomas, center, after awards luncheon honoring Northrop's program as the most outstanding in industry. With Thomas are Dr. R. J. Krebsbach, corporate medical director, and Ed Furtado, right, program administrator.

GEORGE HARRIS, chief, Employee Relations and Services, Electronics Division, right, presents $500 scholarship check to Joe Moreno, senior mechanical engineering student at Texas A&I University. Contribution was made by Northrop for the university's student scholarship fund. Dr. D. A. Hicks, senior vice president, Technical, is chairman of Northrop's University Relations Advisory Board.

Good Grief! There IS a Great Pumpkin!

DESPITE WHAT YOU may have read in some funny papers, there really is a Great Pumpkin. And kindergarten children from five Anaheim schools found it in the Electro-Mechanical Division's pumpkin patch. The pumpkins were planted by Art Boston as part of the activity of the NRC Horticulture Club. The club "farms" unused company land at the Anaheim plant, gardening at noon and after work.

The school visits resulted after a kindergarten teacher saw the pumpkins as she drove along the adjoining freeway. The original visit of 12 kindergarteners last year grew into 280 this year as five schools came to see the Halloween fruit.

As part of the visit Betty Duba, president of the club, showed the visitors how to turn a pumpkin into a jack-o-lantern which the children took back to their classroom to keep them company until Halloween.

Among the club members who helped with the field trip are Peggy Lambert, Sefie Garcia, Linda Jozaitis, Betty Schulz, Jan Loomer and Ginny Dunn.

HERE IT IS — NORTHROP'S GREAT PUMPKIN

Along with Kimberly Brady, 5, of Thomas Edison School, Anaheim. Kimberly, missing teeth and all, modeled for the jack-o-lantern. (Photos by Bob Thornton)

HERE'S HOW IT'S DONE

Visitors see Betty Duba turn pumpkin into jack-o-lantern, above. Below, Smiling Jack goes back to school with his new friends from Thomas Edison School.

NDI SERVES ELECTRONICS, OTHER DIVISIONS

Northrop Dakota Means 'Involvement' In Ne

COMMUNITY involvement is something most companies strive for, but in New Town, North Dakota, the name Northrop means more than just that.

Northrop with about 100 employees is the leading employer in this small city of 1800, located 70 miles southwest of Minot on the Fort Berthold Indian Reservation. The company's payroll contributes substantially to other businesses, providing goods and services, and Northrop helped establish a Day Care Center for children.

"Northrop is the greatest thing that ever happened to this town," said a leading businessman. "It allows us and our children to stay here, and provides meaningful employment."

High Quality Components

The benefits are not one sided. Northrop Dakota, Inc. (NDI) contributes high quality electronic assemblies and components for a number of key national defense programs. NDI was established to provide a low cost manufacturing/assembly facility for all departments of the Electronics Division, as well as support to other divisions of Northrop.

Current programs include: C-5 transport, AWACS, and airborne and shipboard Omega navigation systems — key Electronics Division programs; weapons delivery system and control units for the Aircraft Division's F-5E/Fs; and control units for the HAWK missile launcher, an Electro-Mechanical Division major continuing program.

Northrop Dakota, explains George Downs, vice president and plant manager, produces harness and cable assemblies, printed circuit boards and coil wound components. The 15,000 sq. ft. facility has capacity for high volume or low rate production, and test capabilities include functional checkout of circuit boards, chassis systems, and harnesses.

Of the 100 employees, approximately 32 per cent are Indian and a large percentage are women. They are "highly skilled, dependable employees who have adapted to this demanding work very well," said Downs.

"The New Town operation works closely with the Electronics Division's Hawthorne facility," said Harold Beadle, NDI vice president and Avionics Dept. manager of Operations, "where all purchasing is centralized, and final checkout of more intricate systems is accomplished."

Communications between the facilities, and shipment and control of parts and components are handled very smoothly with no loss of control, Beadle said.

Northrop Dakota opened in October 1970, as a wholly owned Northrop subsidiary. A. B. "Burney" Lipscomb, vice president and manager, Avionics Dept., serves as its president.

Current plans call for NDI to be merged into Northrop Corporation at the beginning of 1976. It then will be operated as the Northrop Dakota Manufacturing Plant, a subdepartment of the Electronics Division.

H. L. "Hal" Janssen, Electronics Division manager of Division Relations and Services, played a major role in Northrop Dakota's development and success. He credits the Bureau of Indian Affairs, local leaders, and state officials with pointing up the advantages of the site to Northrop's management and in coordinating establishment of the facility. The U.S. Dept. of Labor supplied funds for training personnel.

Advantages of the NDI location included lower labor costs, a facility provided — by the New Town Development Corp. — at very low cost, and a state tax exempt status for five years.

"Northrop also provided a very real and needed solution to a serious economic and social problem of the area — high unemployment and lack of meaningful job opportunities," said Janssen.

Janssen also was instrumental in setting up the Day Care Center in New Town, which currently takes care of some 45 children daily, so young mothers can hold jobs. The company participated in a cooperative effort — with interested townspeople, and with the U.S. Dept. of Health, Education and Welfare (HEW), he said. Northrop provided a $5000 grant to get the Center started, and now the operation is entirely funded by HEW through the Fort Berthold Reservation Tribal Council.

A. B. Lipscomb

Harold Beadle

H. L. Janssen

George Downs

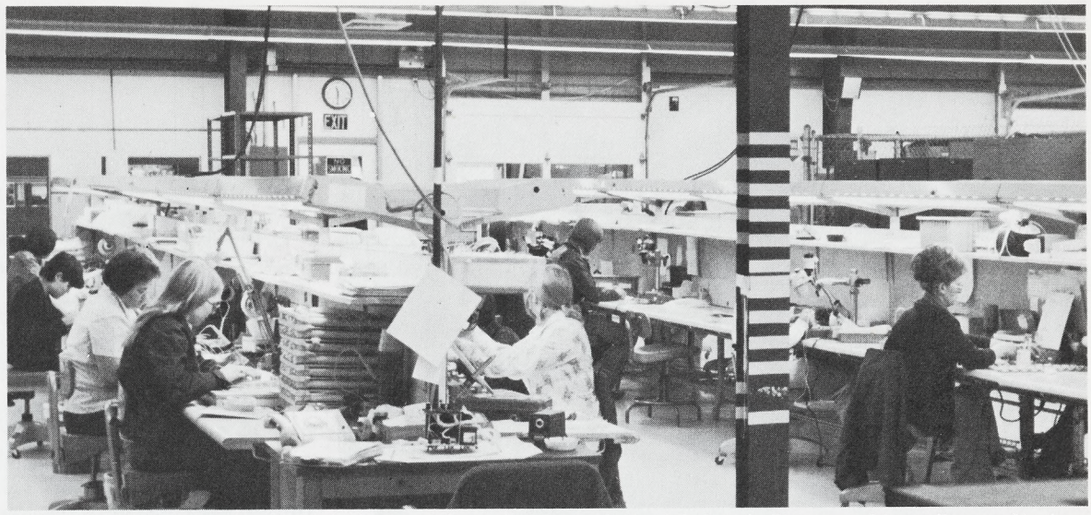
DAY CARE CENTER, established with Northrop assistance, attends to children of working mothers in New Town. Here, staff members Mary Jane Fox, seated center, and Marlene Fox, director, observe finger painting creations of, left to right, Lorne Lockwood, Todd Crawford, Carson Hood and Mellisa Hood, 4-5 year olds. Approximately 45 children currently attend center. About half the children belong to Northrop Dakota employees. Northrop provided a $5000 grant to start the Center.

n New Town

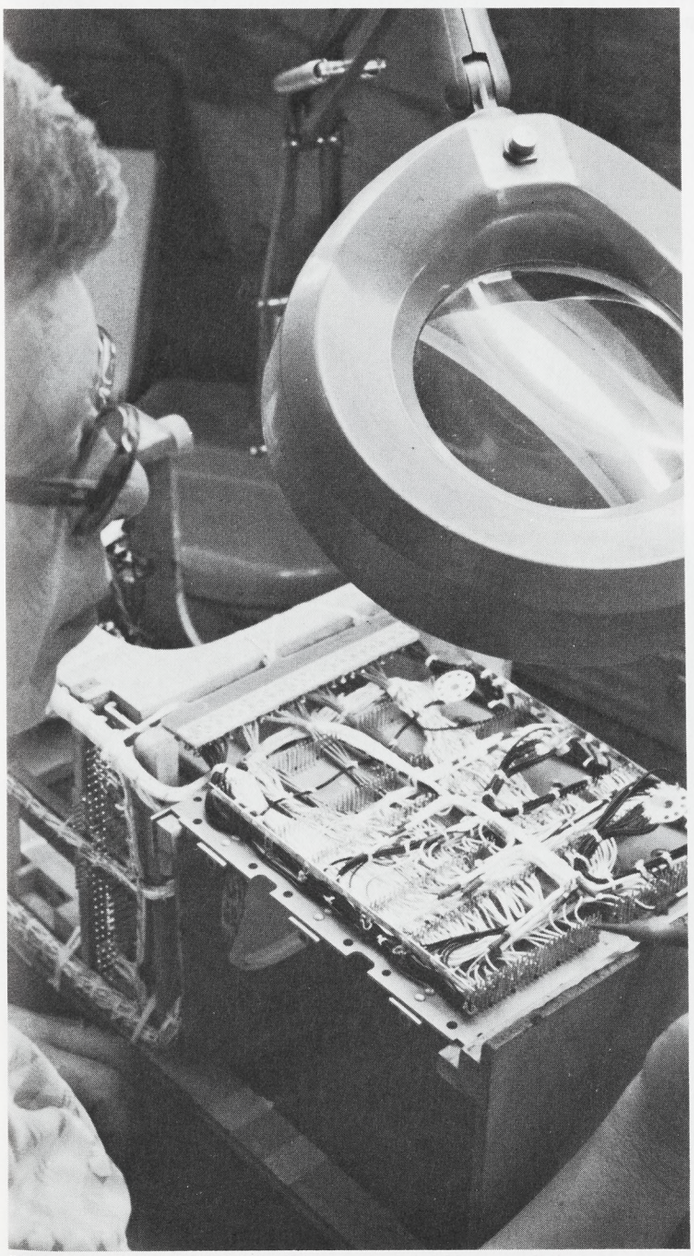
"The Center has worked out well for us," Downs said. "About half the children belong to Northrop employees." Children whose parents work for other employers also utilize the Center, which has a full-time staff and a director.

"I feel our part in setting up the Day Care Center illustrates the responsiveness of a company to the social need of the community," Janssen said.

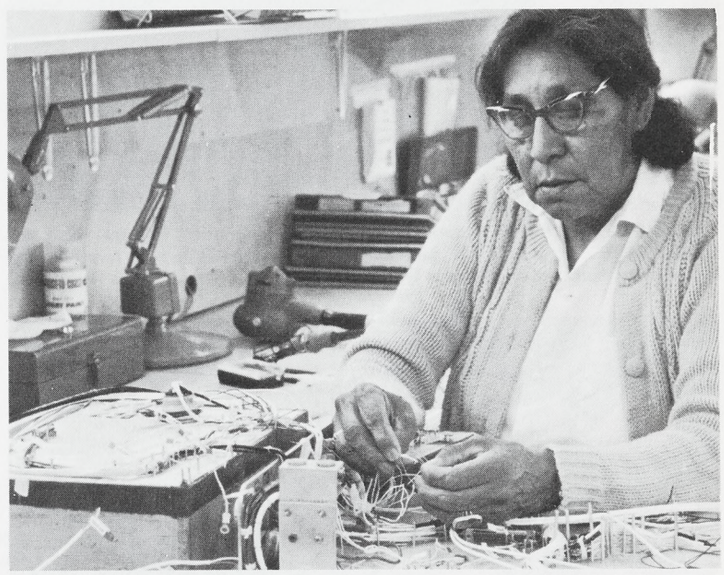
Talk about community involvement — that's Northrop in New Town.



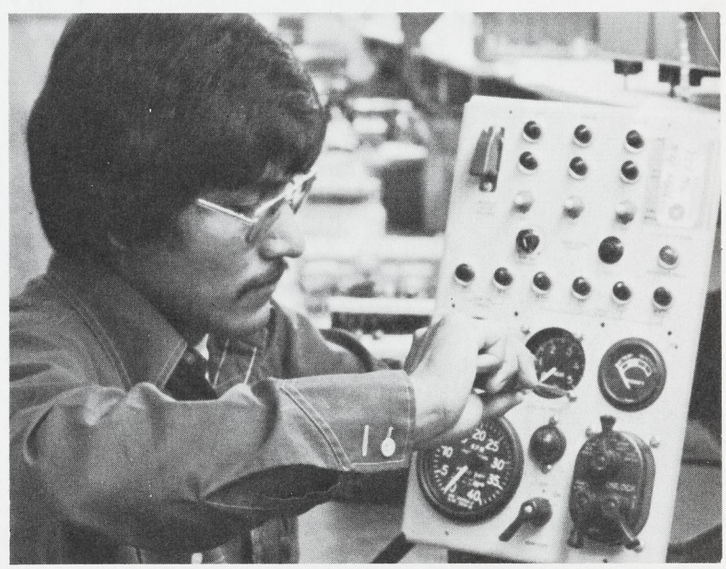
NDI ASSEMBLY AREA shows part of skilled work force which has made North Dakota facility successful contributor to Northrop Corporation. New Town operation works closely with Electronics Division's Hawthorne facility.



DISPLAYING CRAFTSMANSHIP required for Northrop Dakota programs, Elvina Stringer solders connection on C-5 Transport converter harness.

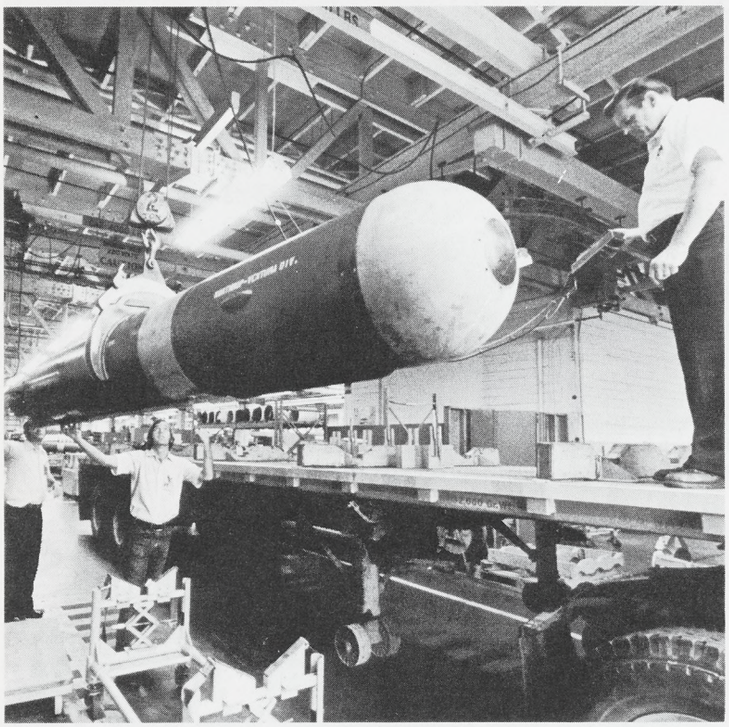


MARY CONKLING ELK, a senior NDI employee assembles C-5 Inertial Measurement Unit (IMU) housing harness, utilizing intricate skills learned on Fort Berthold Reservation. As member of the Hidatsa Tribe, she learned Indian arts of pottery, bead and quillwork — helping qualify her for her current position. Mary has worked 4½ years for Northrop and finds it 'one of the best places I have ever worked.'



EMD HAWK LAUNCHER control box is assembled at Northrop Dakota, Inc. by Carson Hood. HAWK launcher is long-time program of Electro-Mechanical Division.

Ventura Division Improves NT-37C Capability



NORTHROP PERSONNEL stationed at Naval Torpedo Station, Keyport, Wash., for Ventura Division load a NT-37C torpedo onto truck transport prior to torpedo being taken aboard launching craft. From left: Jim Burgess, Dave Cobb, Navy's Dick Geise.

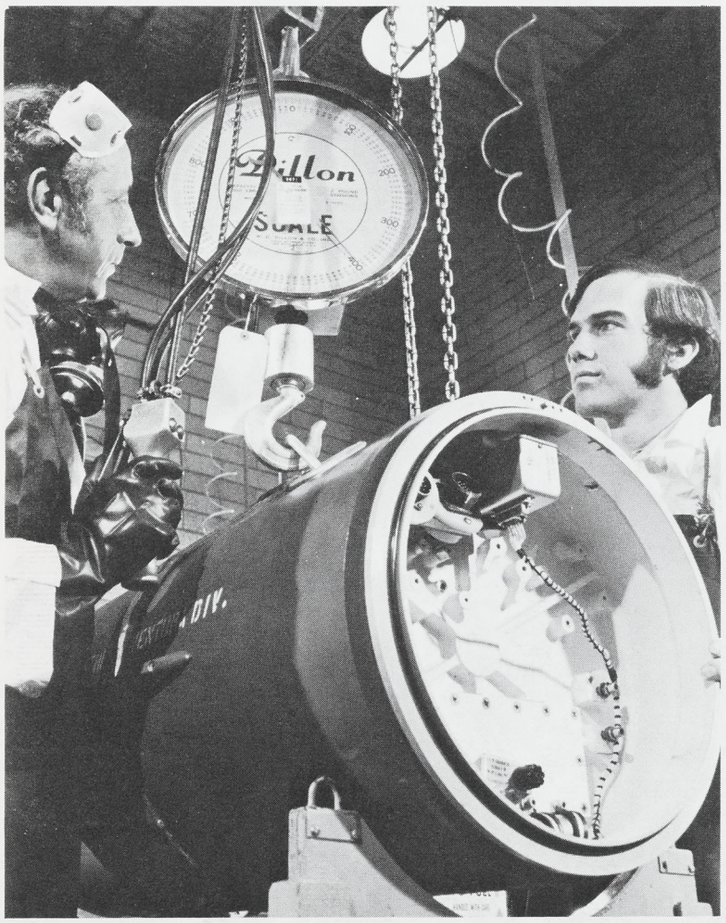
Northrop's NT-37C torpedo modification program has developed into a major Marine Systems program at the Ventura Division since its start in 1968.

Originally, the NT-37C consisted of a speed increase kit developed by the Ventura Division and a Northrop-packaged U.S. Navy acoustic system improvement for the Navy's MK-37 dual purpose torpedo designed for use against both surface ships and submarines.

Ventura engineers replaced the electric motor and propulsion battery with an improved version of the OTTO-fueled thermochemical engine used in the Navy's MK-46 torpedo.

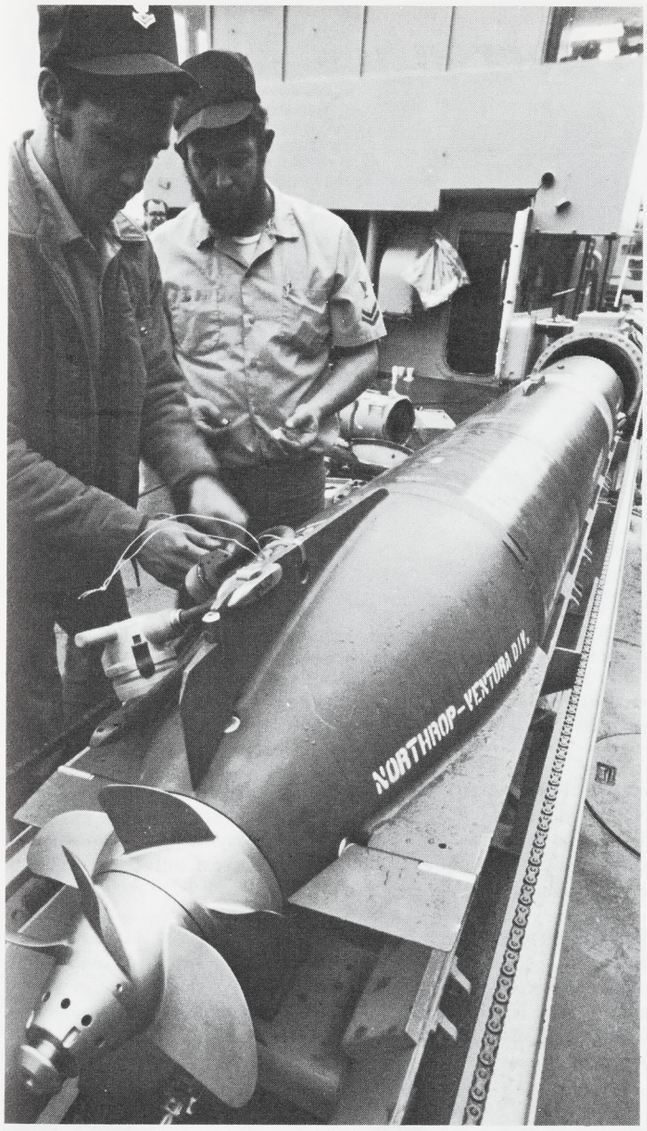
This coupled with the improved acoustic package has resulted in a more than 40 per cent speed increase, 60 per cent increase in endurance and greater acoustic detection capability.

The improved torpedo has been designated the NT-37C and Ventura Division Marine Systems engineers have continued to improve the system's capabilities including the latest surface ship deck tube launching tests underway at Keyport, Wash. The ability for such launches will extend the NT-37C's uses to fast-moving surface craft such as torpedo boats, coastal patrol boats and destroyers.

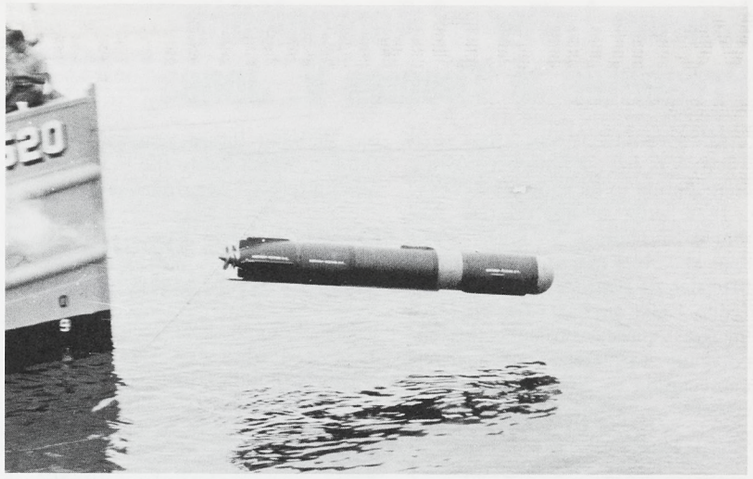


FUEL SECTION OF the NT-37C is weighed following loading with OTTO thermochemical fuel at U. S. Navy's Keyport, Wash., facility. At left is Ulrich Von Gaza with Dave Cobb, right. Use of OTTO-fueled engine is one of major modifications.

FIRE CONTROL SYSTEM is plugged into NT-37C torpedo by John Nasson before deck tube launch from vessel on Navy's Dabob Bay Range, Keyport, Wash. NT-37C torpedo modification program has been going on since its start in 1968.



FINAL CHECKOUT ON Ventura Division's NT-37C torpedo is made by U.S. Naval Torpedo Station personnel prior to deck tube launch test. Torpedo has increased speed, range and detection capabilities.



DECK TUBE LAUNCH of Northrop's NT-37C at Navy's Dabob Bay Underwater Test Range, shows torpedo before entering water where it will submerge and run prescribed course. Torpedo is now in use with Canadian and Netherlands navies.

TORPEDO RECOVERY is made after deck tube launch test by Navy personnel who are assisting Ventura Division in the NT-37C testing. Ability for such launches will extend NT-37C's use to fast-moving surface craft such as torpedo boats, coastal and patrol boats.

TORPEDO IS WINCHED aboard and then fastened down with straps by Navy personnel on retrieval boat after deck tube launch test at Underwater Test Range.

Korean Letter of Appreciation Presented to Thomas V. Jones

The Republic of Korea has cited Thomas V. Jones for his outstanding contribution to its national security.

In a letter of appreciation presented to Thomas V. Jones, president and chief executive officer, the Minister of National Defense, Suh Jyong Chul, said in part, "it gives me great pleasure to take this opportunity to extend my heartfelt appreciation to you for your great cooperation rendered to the Republic of Korea Air Force in its modernization.

"Your understanding of and great cooperation with ROKAF have greatly contributed to the preservation of our national security as well as to further strengthen the ties of the existing friendship between the United States of America and the Republic of Korea."

Mr. Jones, while attending the 1975 Korean Armed Forces Day celebration in Seoul as a guest of the Korean Government for the purpose of receiving the letter of appreciation, told Korean officials that the Republic of Korea and its Air Force have contributed much assistance to Northrop through the very thorough and continuing exchange of information concerning their operation of Northrop aircraft.

"This vital communication between your air force and our company has been of great assistance in our defining future generations of the F-5, which led to the F-5E, and other aircraft," Mr. Jones said.

Ross-Loos Opens Office in Santa Ana

Ross-Loos Medical Group, health care provider for over 2000 Northrop families, has expanded its facilities in Orange County with the opening Nov. 3 of a new, three-doctor community medical office in Santa Ana, at 1125 E. 17th St., Suite W-120.

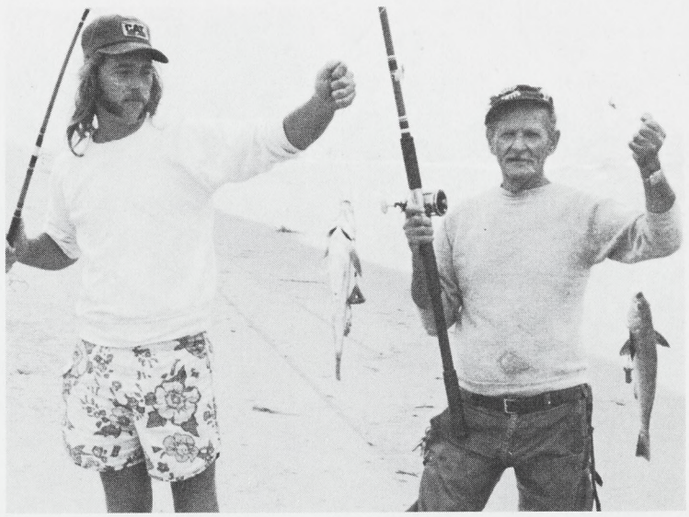
Nancy E. Glick, M.D., heads the office as director and Pat Johns, R.N., is charge nurse.

Services offered at the new facility include general medicine, pediatrics, laboratory, EKG and hypodermic medication. In addition, x-ray and pharmaceutic facilities are available.

Personnel Activities Would Like Your Old Decorations

Marie Tully, manager, Personnel Activities, has asked that all departments planning to buy new Christmas decorations to please pass the old ones on to Personnel Activities.

Recreation Notes



WHAT A FISH STORY! Bill Maxwell, right, manufacturing specialist, Aircraft Division, and his son, Jim, hooked on to two-pound corbina simultaneously during the NRC Sea Anglers field meet in Manhattan Beach. The club holds monthly field meets at different locations along the coast. Site of the December meet will be announced at the club meeting Tuesday, Dec. 2, 7:30 p.m. in the NRC Clubhouse.

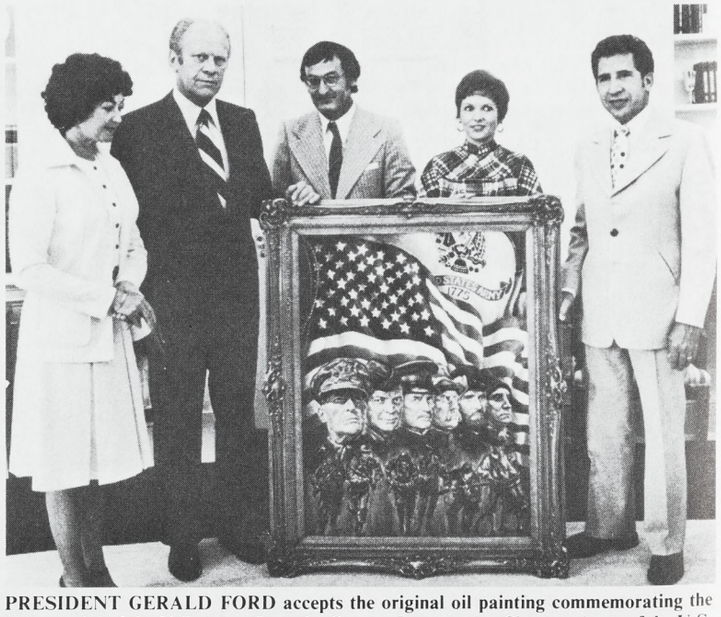
★★★

A Happy New Year Party Dance is scheduled for Wednesday, Dec. 31, at the NRC Clubhouse from 9 p.m.-1 a.m. Tickets are $7.50 per person and all liquid and fun ingredients will be provided, including noisemakers, hats and anything else that goes with New Year's Eve. Contact Personnel Activities for tickets.

★★★

Special arrangements have been made for employees to purchase Christmas toys at discount prices with Southwestern Novelty Company, 330 S. Los Angeles St., Los Angeles. Christmas toys shopping days are: Saturdays — Nov. 22, Dec. 6, and Dec. 13, from 9 a.m.-4 p.m. Sundays — Nov. 23, Dec. 7, and Dec. 14, from 10 a.m.-4 p.m.

RECEIVING LETTER OF APPRECIATION from the Korean Minister of National Defense, Suh Jyong Chul, is Thomas V. Jones, Northrop president and chief executive officer. Mr. Jones was the guest of the Korean Government during the 1975 Korean Armed Forces Day celebration in Seoul.



PRESIDENT GERALD FORD accepts the original oil painting commemorating the bicentennial of the U.S. Army from the Greater Los Angeles Chapter, Assn. of the U.S. Army; the artist, Jaroslav Gebr, center; and chapter president Dr. William Simecka of Northrop's Electro-Mechanical Division, right. Others are Mrs. Adala Gebr, left, and Mrs. Judy Simecka. The association is a non-profit educational organization supporting all components of the U.S. Army. It has approximately 1200 members in the Los Angeles, Ventura and Orange counties. Dr. Simecka served as president of the Greater Los Angeles Chapter from July 1973 to July 1975. The Gebr painting is one of 10 new battle scenes featured in 'Vanguard of Freedom,' a collection of 90 Army art works exhibited at the Annual Army Ball in June. (White House Photo)

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Pontiac, 1969 Custom S., 2-dr., h/top, 30,000 mi., radio, a/c, p/s, auto trans., $650. 714-893-8098.

Motorcycle, 1975 Yamaha 80, trial, less than 100 mi., $335. 213-325-7649.

Motorcycle, 1971 Mini-Trail Honda 70, auto. clutch, $175. 213-324-5969.

Ford, 1973 sta. wagon, fully equipped, AM/FM stereo/tape, C.B. radio, a/c, p/b, p/s, $3100. 213-777-1930.

Mercury, 1974 Montego Brougham, 2-dr. h/top, a/t, p/s, p/b, AM/FM, under 16,000 mi., $4395. 714-531-8845.

Motorcycle, 1971 Honda SL-175, street or dirt, new eng., knobby tires, $400. 213-370-6721.

Motorcycle, 1973 Honda M/C, MT-250, extras, $575. 213-541-3000.

Motorcycle, 1973 Honda 500, 4-2 exhaust, ext. front end, custom bars, 15" rear whl., $1175. 213-322-0545.

Olds 98, 1968, 50,000 mi., a/c, all power, $950. 213-329-8153.

Cadillac, 1970 Sedan DeVille, all access., $2095; Datsun, 1974 610, 4-spd., a/c, $3095. 213-532-7846.

El Dorado, 1970, new tires, many extras, $2400. 213-675-3850.

Motorcycle, 1974 Honda 250XL, $700. 714-979-0277.

Mazda RX4, 1974, 10,000 mi., AM/FM stereo, $3395. 213-973-1136.

Camaro, 1974, a/c, auto. trans., mag whls., only 7000 mi., $3900. 213-370-6900.

Grand Prix, 1975, fully equipped, sun roof, 5000 mi., $6200. 213-836-1852.

Motorcycle, 1971, Honda SL175, 3000 mi., $400. 213-377-5059.

Chevrolet, 1971 Malibu, 307 eng., new tires & trans., 39,000 mi., $1750. 213-370-1021.

Motorcycle, 1956 Triumph Bonn., rigid frame, tank, fender, rail, extras, $125. 213-371-5308, 213-376-7323.

Motorcycle, Kawasaki KX-125, dirt, used 2 times, $650. 213-324-5449.

Motorcycle, Yamaha 80 Enduro, 500 mi., 7 mos. old, $350. 213-644-2780.

Dune Buggy, VW, new big bore on 40, dirt tires & sand paddles, Zenith carb., $850. 213-941-1865.

Motorcycles, 1972 Yamaha, chopper, custom, $2000; 1971 Honda, 450cc, $675. 213-454-2255.

Firebird, 1968 400, new tires, clutch, & brakes, $1000. 213-371-3202.

Motorcycle, Honda 450 CB, 6100 mi., $585. 213-378-5494.

Motorhome, 1969 Travco, 21', 35,000 mi., $7900. 213-374-6695.

Truck, 1973 ¾ GMC 454, w/camper, 11' Dreamer, Sierra Grande cab, a/c, p/s, p/b AM/FM stereo, $7400. 714-826-0975.

Ford, 1974 Van Camper, self-contained, $4900. 213-360-9625.

Ford, 1976 Granada Ghia, all power equipped, $6495. 213-832-3129.

Ford, 1972 LTD, Country Squire sta. wagon, 48,000 mi., $2500; Pontiac, 1965 LeMans, rebit. eng., $275. 714-522-1709.

Chevrolet, 1972 Vega GT, 47,500 mi., $1800. 213-472-5374.

Toyota, 1969, rebit. eng., $550. 213-422-4020.

Vehicles For Sale

Pick up, 1960 Ford, F-100, w/camper shell, 6 cyl., 3-spd., rebit. eng. & trans., $1275. 213-973-1722.

Mazda, 1972 RX-3 wagon, a/c, AM/FM stereo, mags, $2100. 213-538-2806.

Honda, 1973 Civic Sedan, $1975. 213-677-5820.

Plymouth, 1971 Duster, p/s, a/t, r/h, 6-cyl., 225 cu. in. eng., extras, $2000. 213-559-3179.

Motorcycle, 1972 Honda CB 350, 2657 mi., $650. 213-329-5815.

Porsche, 1972 911S, coupe, 1973 eng. & trans., AM/FM cassette, 181 h.p., $8995. 213-924-4562.

Volvo, 1963, P-1800 sport cpe., 4-spd. & o/d, AM/FM radio, needs muffler & uphol., $675. 213-778-7594.

Cadillac, 1959 Coupe DeVille, $250. 213-368-4519.

Cadillac Coupe de Villes, 2, both fully equipped, 1975, 7000 mi. $8000; 1974, 16,000 mi., $6600. 213-370-7861.

Porsche, 1974 914 1.8, AM/FM stereo, 17,500 mi., $5800. 213-675-4774.

Miscellaneous For Sale

Stove, oversized G.E., w/4 burners, 1½ yrs. old., $100; shelves, wrought iron, $50; lounge chair, green vinyl, $20. 213-764-7904.

Refrigerator, 21 cu. ft., $75. 213-322-0545.

Watches, Lucien Piccard, his & hers, $25. 213-376-2127.

Jacket, vinyl, men's lge. size, black, $12.50; trailer jack stands, 2, $2.50. 213-677-8868.

Sailboat, Clipper 21', swing keel, full cruise equipped, $2700. 213-823-6245.

Refrigerator, Frigidaire, 12 yrs. old, $95. 213-833-7819.

Guitar, Gibson, elec., S.G. std. model, hard shell velvet case, $350. 213-865-7239.

Bunk Beds, maple, $60. 213-375-5009.

Wheels, std., set of 4, 6-15 w/5 holes on 5" dia. bolt pattern, L78-15 2-ply belted tires, hub caps, $50. 213-324-5969.

Tables, walnut, 36" round, 72" coffee table, $20. ea. 213-673-0195.

Pot Hanger, macrame, approx. 6', holds 16" pot, natural brown string, $30. 213-679-7996.

Sewing Machine, Emdeco, w/cabinet, seldom used, $75. 213-378-2338.

Aquarium, 40 gal., stand, filter, extras, $40. 213-973-1685.

Tape Deck, Teac 6010, auto. reverse & pause control, 100 hrs. use, $400. 213-644-2941.

Movie Camera, Yashica Super 8, unused, TV game show, $250. 714-968-3726.

Bicycle, 24" 3-spd., $50. 213-326-6456.

Goose Decoys, 100, $50. 213-375-9353.

Mattress & box spring, twin size, $30; paddle board, wood, approx. 12' long, $10. 213-677-7421.

Bicycle, 20" stingray coaster, $23. 213-376-4831.

Camera, Polaroid SX-70, mod. 2, never used, completely auto., $75. 213-862-5893.

Bicycle, boy's 10-spd., $40, washer, Kenmore, $40; bicycle, small girl's, $15. 213-539-3909.

Train Set, H.O. scale, incl. power pack, eng., 3 cars, 10' oval track, $15. 213-325-3452.

Sailboat, 24' Dolphin, $7000. 213-374-3900.

Boat, 16' Champion, trailer, $300; engine, disassembled, 6-cyl., from TR-250, $50. 213-644-8311.

Bed, single, near new mattress & springs, $35; oven, elec., Westinghouse, $35; bed, solid oak, antique, $150. 213-326-6040.

Player Piano, antique 1916, Carola-Inner, $2400. 213-676-9642.

Bicycle, 26" girl's 3-spd., $25; caconer grill, Westinghouse, $15. 714-848-1386.

Stole, azurine mink, $300. 213-835-3869.

Lawnmower, 18", rubber tires & grass catcher, $10. 213-677-5649.

Organ, Conn, dble, keyboard, walnut, $350. 213-630-4188.

Miscellaneous For Sale

Dining Room table console type, opens to seat 12, $250. 213-894-1381.

Camper, 1971 Open Road, cab over, 9½', $950. 213-644-6248.

Bicycle, Schwinn, folding type, 3-spd., $35. 213-378-5494.

Ski Boat, 1974 18' Avenger, inbd. jet 455 Olds eng., trailer, $5000. 213-256-4469.

Corner Desk Group, walnut, 4- & 8-drwr. chests & matching chair, $150; wedding ring set, diamond, antiqued yellow gold rose pattern, $400; file cabinet, 2-drwr. locking, $30. 213-532-2610.

Piano, Kimball spinet, bench, $650. 213-545-8640.

Tent Trailer, Apache Buffalo, 3 dble. beds, stove, sink, water, 8000 B.T.U. htr., $550. 213-371-3615.

Roll-A-Way bed, ¾ size, $25. 213-679-0043.

Cornet, Yamaha, case, $135. 213-378-4959.

Skiis, Head 360's, 200 c.m. w/Marker-Rotomat bindings & Geze anti friction device, $50. 714-828-4853.

Boat, 22' 1974 Sea Ray Overnighter, 188 h.p. Mercruiser I/O, full galley, sleeps 6, fully equipped, $9450. 213-374-7165.

Pinball Machine, w/flippers, $365. 213-371-2664.

Silverware, silver plate, 92 pcs., service for 8, rose pattern, $50. 213-833-5515.

Organ, Hammond, mod. M-3 w/percussion, maple cabinet, $495. 213-376-6415.

Piano, spinet, Kohler & Campbell, New Yorker, bench, walnut, Danish modern, $675. 213-644-3742.

Model Trains, N ga. & layout, $35. 213-324-4817.

Guitar, Fender, pro-reverb. amp., $275; fuzz master, Ace Tone, for guitar, $10; radio, Craig AM, $5. 213-679-7730.

Trailer, 14' Tear drop style, complete galley, $375. 213-677-5820.

Hiking Boots, Vasque, size 8½ E, $25. 213-328-4408.

Eico, mod. 435 3" scope, $125; Eico, mod. 377 audio gen., $50. 213-941-1865.

Boat, 25', 145 h.p. Chris-Craft ML, 2 new 96 a.h. ea. diehards, marine band transceiver, many extras, $3400; diver's rig, Hookah, for 2 to 130', $500. 213-973-6940.

Guitar Amplifier, Fender Dual Showman, 1 yr. old, 110 w., 2 15" JBL D-130 spkrs. in cabinet, & guitar, Arms copy Les Paul, $550; cabinet, Fender, 3 12" Fender spkrs., $110. 213-335-3940.

Bar, 6', black vinyl, padded, brass trim & 4 black padded stools, $300. 213-644-2175.

Tire Chains, fit 7.60-15 or 8.50-14 tires, $15. 213-869-2673.

TV, Sears color, 19", $95; low-boy cabinet, modern, teakwood, $25. 213-778-7594.

Digital Clock AM Radio, Panasonic, white case, $25. 213-347-0298.

Wanted To Buy

Engines, old model airplane. 213-329-4090.

Car, transportation for college student, auto. preferred, no V-8. 213-675-3130.

Freezer, upright lge. size, max. cost $100. 213-325-3838.

Bicycle, ladies 26" 3-spd., or none. 213-539-2487.

Lawn & pool furniture, old broken down, made by Tropitone or Brown-Jordan. 714-847-0795.

Bicycle, man's, in any condition. 213-545-3958.

Bunk Beds in reasonably good condition. 213-378-4498.

Tow Bar, Volkswagen &/or Jeep. 213-373-2470.

For Sale Or Trade

Gun, mod. 10 S&W .38 police special, trade for new men's Schwinn 10 spd. bicycle. 213-322-5136.

Sledge Hammer, 12 lb., in good condition, trade for 8 lb. 714-637-4723.

Duster, 1970 318, V-8, p/s, a/c, 3-spd. trans., $1150 or trade for small pickup. 213-973-1947.

Northrop News

Northrop News is published monthly by Northrop Corporation Employee Communications. Mailing address: Northrop News, 172/AJ, Northrop Corporation, 3901 W. Broadway, Hawthorne, CA 90250.

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Tom Quintana, Aircraft Division, (213) 970-4870, ext. 4870

Jim McEvoy, Precision Products Dept. (617) 762-5300, ext. 311

Rentals Wanted

Garage in Hawthorne or surrounding area. will pay reasonable price. 213-644-6433.

Cabin in Southern Calif. mountains. Must be clean & reasonably priced. 213-675-4367.

Rent or borrow, male silver tip Persian cat. 213-375-9340.

House, share 2-bdrm., pvt. entrance. Prefer Spanish speaking lady, Inglewood area, $100 per mo. 213-671-0883, 213-673-0678.

Personals

My family & I want to express our deep appreciation to our many friends at Northrop for the flowers, sympathy & kindness expressed during the loss of my father. VICTOR GARCIA JR.

Thanks to all my co-workers & friends at Northrop for the great retirement party & gifts. AL RYAN

Many thanks to the Northrop good neighbors who so graciously answered my call for help to aid my neighbor who lost his home & possessions during a recent fire. JAN SMITH ON BEHALF OF THE WILLIE LYNCH FAMILY.

I will pay your boating expenses in exchange for sharing the use of your 25' or over sailboat. 213-546-1688.

Sincere thanks for all the expressions of sympathy extended at the recent death of our son, Gary. SHERM & ANN TURNER

We wish to acknowledge with grateful appreciation your kind expressions of sympathy at the passing of our beloved father & husband, Ray C. Hansen. KATHRYN HANSEN & FAMILY

Many thanks to all who expressed their condolences on the passing of my father. Special thanks from my mother for the beautiful plant sent to her home. B. J. HAGAN

I want to thank all of you for the gifts & flowers I received during my illness. JOSETTE JUAREZ

Free

Pup, Shepherd & Labrador mix, approx. 4 mos. old. 213-538-2806.

Hamster, male albino, good tempered. 213-378-3845.

Ride Wanted

Ride wanted, 8 a.m.-4:42 p.m., from Harbor Shopping Center, Costa Mesa to Anaheim, Electro-Mechanical Div. ext. 1297.

Riders wanted, 7 a.m.-3:42 p.m., near San Bernardino Fwy., El Monte, to 605 Fwy., Electronics or Aircraft divisions personnel, Elect. Haw. ext. 2898, 213-334-5778.

Ride or riders wanted, San Gabriel & El Monte area, 7 a.m.-3:42 p.m., Aircraft Div., ext. 2272, 213-280-5073.

Ride wanted Harbor City area, 7:30 a.m.-4:12 p.m., Hawthorne, Aircraft Div., ext. 4941.

Ride wanted from Riverside to Hawthorne, 7 a.m.-3:42 p.m., Aircraft Div., ext. 5225.

FRIENDS OF RON'S gather around at feeding time at Palos Verdes facility. Ron Koller, Northrop Aircraft Division courier and avid animal lover, pauses briefly each day during Palos Verdes trip to feed ducks and rabbits. A 26-year Northrop veteran, Ron who averages 132 miles a day on his rounds, has been feeding PV pets since he started his courier run four years ago. He also supplies medical attention, as with the rabbit who recently suffered a severely bitten leg. Ron plans to retire in December.

NRC Calendar

Las Vegas Night

NRC Electronics Division's first Las Vegas Night held on Nov. 7 was judged a "great success" based on the large turnout and enthusiasm of the crowd attending. Proceeds from the event will be used for the Children's Christmas Party, Dec. 14. NRC wishes to extend a special "thank you" to all employees and management people who volunteered their time to make Las Vegas night a success.

LAST VEGAS NIGHT hosted by Electronics Division NRC was considered a 'great success.' Here, June Hamze, wife of E. A. Hamze, test engineer, Hawthorne, deals 'em out in blackjack. Proceeds from event go for Children's Christmas Party to be held next month.

Arts and Crafts Show

All employees, families and friends are invited to attend the second annual NRC Arts and Crafts Show at the NRC Clubhouse, Saturday, Nov. 22, and Sunday, Nov. 23. Hours are from 10 a.m. — 4 p.m. both days. Admission is free.

Basketball

There will be a meeting of all managers and coaches of teams wishing to play in the 1976 NRC Basketball League scheduled to begin play in January. Commissioner Ron Fisher urges all interested persons to attend the organization meeting Wednesday, Dec. 10, 5 p.m. in the NRC Clubhouse.

Skin and Scuba Diving

NRC Skin and Scuba Diving Club Commissioner Jacob Ramon has announced a meeting will be held at the NRC Clubhouse Tuesday, Nov. 25, 6 p.m. to discuss the upcoming boat diving outing off San Clemente Island on Sunday, Dec. 7. Jack Mertz, marine biology lecturer, will give a slide presentation on Southern California marine life.

Art Club

A special meeting of Northrop artists has been called for Monday, Nov. 24, 7-8 p.m., at the NRC Clubhouse to discuss what kind of art club members want. Contact Vernon Olmstead, acting Art Club commissioner, Aircraft Division ext. 3072 for information.

SHOOTS HOLE-IN-ONE

Our Man in Scotland

Al Collins, Electronics Division representative, recently beat the odds and made a hole-in-one at historic St. Andrews Golf Course in Scotland.

Collins, who lives in Edinburgh, was playing with the Ferranti, Ltd. team against the Royal Air Force team from Leuchars. The foursome almost witnessed a real record - breaker when, at the next par three, Al's ball landed two inches to the side of the cup. The team unfortunately was beaten and the trophy went to Leuchars.

Al Collins

St. Andrews, the first golf course ever built (500 years ago), is not far from Edinburgh where Al is the Electronics Division technical rep at Ferranti Ltd. and at Plessey Ltd., located in Ilford, England. Since May 1972, Collins has worked with Ferranti on the Inertial Navigation Attack System (INAS) for which Northrop is the exclusive U.S. licensee. His liaison activities with Plessey concern the weapons control panel; again Northrop is the U.S. licensee.

Both projects are part of the Harrier program which began in 1971 with a contract from the Naval Air Systems Command in Washington, D.C.

Collins, who has been with Northrop for 17 years, reports to John McIntyre, chief of Product Support, program office. Prior to his assignment in Scotland, Collins was the division respresentative at General Precision Labs, Pleasantville, N.Y., and has previously worked at the Palos Verdes, Hawthorne and Anaheim facilities.

The INAS built by Ferranti and the weapons control panel built by Plessey are both used on the Harrier aircraft built by Hawker-Siddeley in the United Kingdom. The Harrier is now in service with the U.S. Marine Corps.

Major Move

(Continued from page 1)

itial hardware design phase, said Nils Kolderup, engineering manager.

"We needed a facility with the laboratories and production facilities capable of supporting the program," said Kolderup, in explaining the move. Activities are proceeding on schedule, with a design review set for next May, he said.

The Avionics Engineering Dept., headed by R. B. Whitman, is now located in Buildings 3, 4 and 6 at the Palos Verdes facility. Avionics Marketing and Program Development Dept., headed by A. G. "Al" Taie, is located in Building 3. Some members from Program Management and Product Support Dept. also were relocated from Hawthorne to PV. Personnel from the Advanced Development Dept., headed by C. L. Bose, including A. R. "Art" Gandy, AIDATS program manager, and George Kelly, AIDATS Marketing manager, have moved to Building 3 from Building 6.

TWENTY-YEAR BSL EMPLOYEE, Paula Gardner, secretary to A. T. Migliori, right, vice president and general manager, BSL-Northrop-Torrance, receives service award from George Chalmers, left, president of BSL.

NORTHROP NEWS

ELECTRONICS DIVISION EDITION

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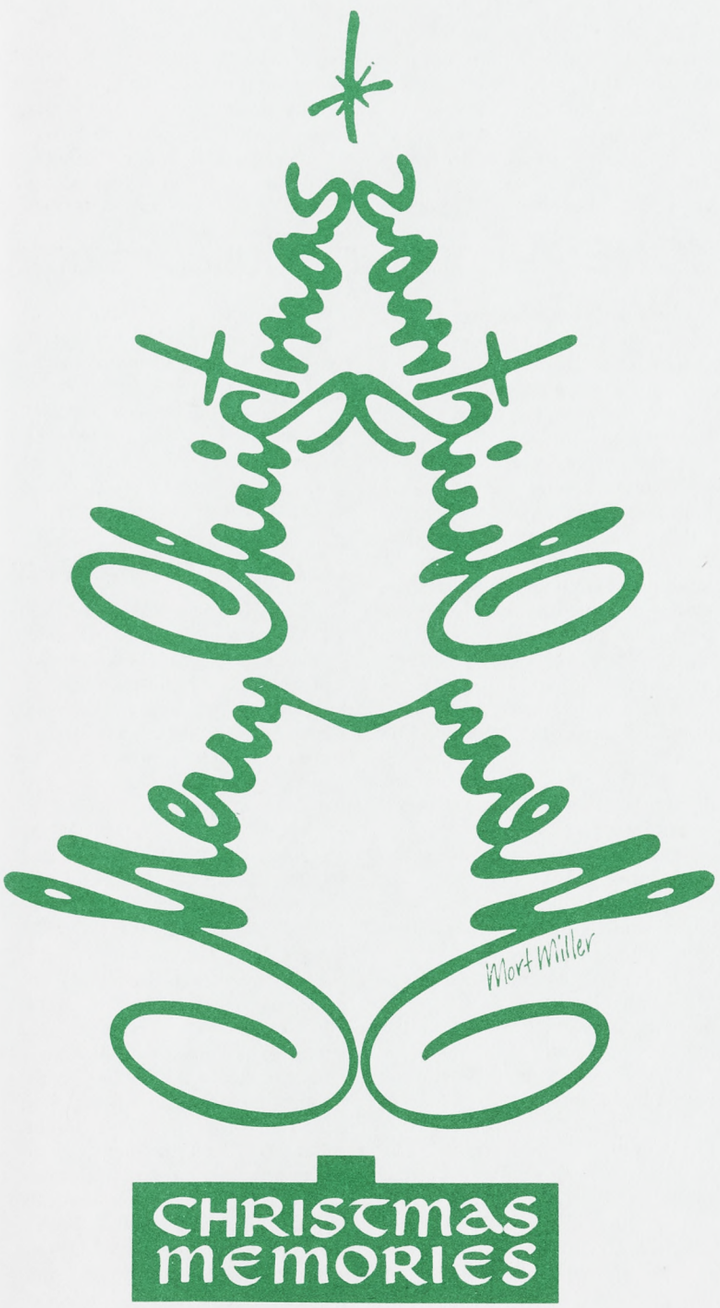
PRESIDENT REPORTS

Company's Strength Wide-Based, Future Bright



"Northrop's position has never been stronger than it is now, as we enter the New Year."

This appraisal of the company's position and prospects for the future were reported to employees by Thomas V. Jones, president and chief executive officer, in a year-end speech, in which he disclosed "our sales for 1975 will be close to $1 billion, compared to $850 million last year.

"We expect that this favorable growth trend will continue next year and for the foreseeable future," Mr. Jones added.

"The company's strong position is broadly based," Mr. Jones pointed out, noting that all divisions of the company are now in strong long-range positions relative to their competition.

"There are perhaps a half dozen major programs that have gotten their start or their acceleration during this last year; the programs that I think form the sound basis for the optimistic outlook that we have for the future," Mr. Jones stated as he gave a few examples:

- The Aircraft Division's F-5E and F-5F family, and the new F-18 program.
- The Electronics Division's new electronic countermeasures system for the F-15 which gives Northrop a very strong position in the ECM field, and the new advanced ICBM guidance program which was won in competition with the largest firms in the business and promises to be a major program in the years ahead.
- The Electro-Mechanical Division's whole range of electro-optical tracking systems, conceived and developed by Northrop — TISEO, LATAR, ISTAR.
- The Ventura Division's MQM-74C target, which remains an important Navy program, and a new expendable target drone system called TEDS that could lead to an Air Force program for over a thousand vehicles.
- The George A. Fuller Company, Northrop's construction division, which had more contract acquisitions in the first nine months of this year than in all of 1974.

"We are on the right track, and we're in a position of strength from which we can move forward confidently," Mr. Jones declared.

Prime credit for the company's success, he said, must go to the 24,000 men and women of Northrop, and "the dedication of everyone to the job of serving our customers well.

"We succeed when our customers succeed," he said.

(See JONES, page 2)

"WE ARE ON THE RIGHT TRACK, and we are in a position of strength," said Mr. Jones in a state-of-the-company address.

Season's Greetings

To Electronics Division Personnel:

In a few short days, we shall be at the climax of the Holiday Season. Please take time to relax and reflect upon your accomplishments during the past year for they have been many and you should correctly be proud of them.

The Northrop Corporation and the Electronics Division have had significant success in the business arena during the year which could and should translate into increased job security for 1976.

The degree to which we meet our commitments during the coming year could very well dictate our business environment for the next five years. We must begin the New Year with a very positive and dedicated attitude towards success if we are to accomplish our goals.

As you celebrate the Holiday Season, relax, reflect and enjoy — you deserve it. May this season be full of joy for you and yours.

David N. Ferguson
General Manager

Milestone Achieved In AWACS Program

A major Electronics Division milestone has been achieved with delivery to the Boeing Co. of the last of five pre-production navigation systems for the USAF's Airborne Warning and Control System (AWACS) E-3A aircraft.

The fifth unit — two systems were provided for test purposes, three others for pre-production aircraft that will later be converted to operational use — was delivered to Boeing on Dec. 12, "right on time," said Vic Moore, AWACS program manager, Avionics Department.

The Avionics Department has already begun work on the first of six production systems, to be delivered next March, under a $4.7 million contract received last June. The Electronics Division is under contract to Boeing for integration, production and testing of all AWACS navigation and guidance equipment.

One of the most flexible and accurate navigation systems yet devised, it combines a Northrop Omega radio navigation set (receiver/computer), a Delco inertial platform, and a Ryan Doppler velocity sensor.

Meanwhile, the first U.S. Air Force E-3A AWACS aircraft fully equipped with production-configured avionics for surveillance, command and control made its first test flight from Boeing Field in Seattle nearly four weeks ahead of schedule.

The aircraft, manned by a mixed Boeing and Air Force crew, began engineering test and evaluation in preparation for formal qualification testing to be accomplished in 1976.

John K. Northrop Named Honorary Founder Director

John K. Northrop, who founded the Northrop Corporation in 1939 and led it for 13 years, has been elected an honorary founder director of the company.

John K. Northrop

Mr. Northrop was cited by the board of directors in a resolution that recognized his role as a founder of the company, and a world-renowned aircraft designer and engineer, and his continuing contribution to Northrop and the aircraft industry in general.

The board also noted that "the spirit of creativity and humanity that he personifies has inspired this company through all its years." Commenting on the board's recognition of Mr. Northrop, Chairman Richard W. Millar said that "integrity, devotion to fundamental principles, modesty and quiet humor are the marks of his gentlemanly character."

Mr. Northrop formed Northrop Aircraft, Inc. after pioneering in the early days of aviation with the Loughead Brothers, founders of Lockheed, and Donald W. Douglas Sr., founder of the Douglas Aircraft Company. He retired in 1952 and now lives in Santa Barbara, Calif.

JONES - Company Outlook Bright

(Continued from page 1)

Mr. Jones pointed out in his presentation that the performance of individuals working together as a team "has not only enabled us to be competitive and win the business and win the customers, but in fact your performance has physically built the corporation."

Mr. Jones pointed out that Northrop has gained an enviable reputation among its customers, among the people who authorize programs and vote on them, and among those who use Northrop products.

"Northrop is different from the rest of the aerospace industry," Mr. Jones declared.

"Creativity and the control are the two essential characteristics of a successful aircraft company.

"When we look around at the rest of our industry we find that those that are in trouble fell down in one, or in some cases both. We have specialized in both.

"Today our industry has matured and I think Northrop is in a leading position to take advantage of this maturity," he said.

Mr. Jones explained Northrop's creative philosophy as "the belief that in order to win the respect of our customers and earn their business we must deliver a product which creatively is responsive to their real needs.

"Control," he said, "means control of costs, control of quality, the harnessing of technology to serve the interests of the customer, rather than letting undisciplined technology serve its own self interest."

The company's record of achievement was attributed by Mr. Jones to Northrop's emphasis on creativity and control.

"It is the creative contribution and dedication of individuals that are our real resources, and that make it possible for us to look to a bright future," he concluded.

Contract Received

The Air Force announced Dec. 15, it has awarded the Electronics Division a $7.2 million contract, of which $538,000 was obligated, for the development of design specifications and fabrication of a prototype system which will be utilized to automate the processing and interpretation of data.

Work on the program will be performed at Palos Verdes and Offutt AFB, Neb. Contract was awarded by the USAF's Rome Air Development Center, Griffiss AFB, N.Y. The contract award is a significant achievement by the Avionics Dept. headed by A. B. Lipscomb, vice president and manager. Those instrumental in the detailed work leading to the award included: Carl Bose, manager, Advanced Development; Bob Whitman, manager, Engineering; Don Zavodnik, program manager; George Hansen, deputy program manager; Bill Baker, project engineer; Len Urban, director, Systems Engineering; Joe Sekiguchi and Al Prince, systems engineers; and Chuck Lotspiech, supervisor, Design Engineering, and many others.

AWACS Team Honored By AFA

The Avionics Dept. received a high honor recently when the Air Force Association presented the Theodore von Karman Award to the AWACS military industrial team in "recognition of this team's creation and application of the Airborne Warning and Control System now in production for the USAF."

A letter to A. B. Lipscomb, vice president and manager, Avionics Dept., said:

"It was my distinct honor to be chosen to receive this award on behalf of all of the many contractors who have contributed to the success of the AWACS program. I would therefore like to take this opportunity to thank you and the members of your organization for the tireless efforts you have put forth to make this year's award to the AWACS possible.

"I would appreciate it if you would pass on to your staff my thanks and those of the AWACS management for a job well done."

(signed) Mark K. Miller
Vice President and General Manager
Information Systems Div.
Boeing Aerospace Corp.

VICKI BURKE, General and Cost Accounting, left, and Sydney Whittlesey, Contract Administration, right, show off some Christmas decorations adorning the tree located in the lobby of Building 2, Palos Verdes. Tree is decorated each year by Miriam Crawford, Security Safety and Plant Protection.

Employee Savings Plan Increases With Dividend

Enrichment of the Employee Savings Plan due to the increase on Dec. 1 in the quarterly dividend from 40 cents to 45 cents per share is a direct result of the individual and collective efforts of the employees of Northrop. Northrop's remarkable achievements have produced steady increases in sales and earnings. This has enabled the board to increase the quarterly dividend on Northrop common stock three times in the past two years: from 25 cents to 28 cents in February 1974; from 28 cents to 40 cents in August 1974; and from 40 cents to 45 cents in December 1975.

The latest 45 cents dividend will bring to $1,853,000, the total amount of dividend money paid into the Northrop Employee Savings Plan in 1975. "This is an increase of 39 per cent over the $1,336,000 in dividend payments received by the plan in 1974, and a 128 per cent increase over the $814,000 paid in 1973," said Richard B. Lohrer, corporate director of Pension Trusts. These dividend payments have been used to purchase additional shares of Northrop stock on the behalf of employee participants in the plan, thus expanding the holdings of the Trustee on behalf of participants.

The plan enables an employee, after 90 days of employment, to invest between two and five per cent of his or her salary and as much as eight per cent after three years of continuous participation. The company matches $1 for every $2 invested by the employee.

Service Awards

Dorothy Baldwin, Property Administration Unit, Western Avenue facility, celebrates her 25th anniversary with Northrop this month to highlight service awards for December.

Two employees — John Brouhard, and Charles O'Toole, Hawthorne, observe their 20th anniversaries with the company in December, while 15th anniversaries are celebrated by Charles Morgan, Hawthorne, and Jerome Daleiden, Palos Verdes.

In November, seven Electronics Division employees observed their 15th anniversaries. They were: Frank Ferraro, Arthur Smith, Glen Barnes, and Robert Carvo, Hawthorne; and Roger Hile, Barbara Joanides, and Nancy Wons, Palos Verdes.

Employees Help Needy Families

The Electronics Division again participated in the Annual Adopted Family Program, marking the 22nd year that Northrop personnel have combined their efforts to make Christmas brighter for those less fortunate than themselves.

This year, Electronics Division departments sponsored six needy families, said Del Wyatt, Employee Services, which is again coordinating the program.

In other division Christmas activities — the annual Children's Christmas party was held Dec. 14.

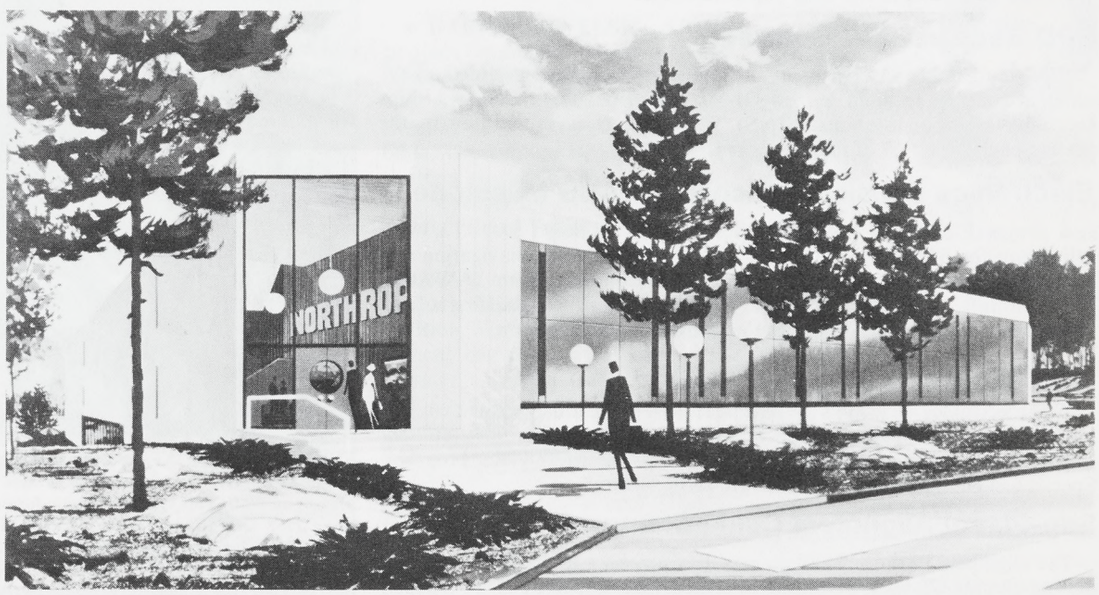
NRC Calendar

Northrop Days

Northrop Days at the San Diego Zoo and San Diego Wild Animal Park have been scheduled for Dec. 20 through Jan. 4. Prices for the visit to the zoo are adults, $3 and children, 4-15 years, $1.25; and for the wild animal park, adults, $2, children, 50 cents. Two San Diego hotels located just minutes from the recreational facilities are offering special Northrop family savings on rooms. Present your Northrop identification badge for the discount. Advance reservations are recommended. Contact your Personnel Activities office for details.

Bowling Tourney

Over 190 employees and family members participated in the all-division NRC bowling tournament in November and when it was over 43 cash prizes, 14 trophies and two special awards had been presented by the three commissioners, Dorothy Baldwin, Electronics; Rosalie Smith and Bob Moyer, Aircraft. Winners were: Don Smith, men's singles — A division; Stan Chavez, B division. Women's singles — Roz Tolson, A division; Maxine Stevens, B division. Men's doubles — Ray Abbenante and Ben Brittingham, A division; Joe Chavez and Stan Chavez, B division. Women's doubles — Arlene Aragon and Iva Williams, open division. Mixed doubles — Nellie Elstran and Bob Moyer, A division; and Arlene Aragon and Eddie McClendon, B division.



NEW PPD FACILITY, shown in artist's rendition, has been designed to accommodate expanding engineering efforts in the navigation and guidance system business and will house approximately 300 engineers and support personnel at Norwood, Mass.

★ News Briefs ★

Northrop Announces Stock Split

The board of directors of Northrop declared a three-for-two stock split in the form of a 50 per cent stock dividend by authorizing distribution of one additional share of Northrop common stock for each two shares outstanding as of Dec. 1, 1975. The board also declared a quarterly dividend of 45 cents per share payable Dec. 20, on shares outstanding as of Dec. 1, except for new shares resulting from the distribution of the 50 per cent stock dividend. Also, a quarterly dividend of 36¼ cents per share on Northrop $1.45 cumulative preferred stock, payable Jan. 7, 1976, to holders of preferred stock of record Dec. 19, 1975.

Electronics Division Receives Contract

Electronics Division was awarded a $7.2 million contract from the Air Force for the development of design specifications and fabrication of a prototype system which will be utilized to automate the processing and interpretation of data.

DSARC II Approves F-18 Full-Scale Development

The U. S. Navy/Marine Corps F-18 Air Combat Fighter program was approved for full-scale development Dec. 2, in a Department of Defense DSARC II (Defense Systems Acquisition Review Council) review of the program.

Electronics Division Passes Critical ACT I Tests

The Electronics Division has passed critical milestones in its ACT I (Advanced Computer Technology Program) with completion of the parts design review and successful testing of candidate semi-conductor devices by the U.S. Air Force. The program is being conducted under a $3.4 million contract awarded by SAMSO for development of advanced computer technology for the USAF's Advanced ICBM Technology Program.

NSI Wins Support Contract

Northrop Services, Inc. (NSI) has been selected by the National Aeronautics and Space Administration to provide engineering support services to the Marshall Space Flight Center, Huntsville, Ala. The cost-plus-award-fee type competitive contract is valued at approximately $9.7 million and covers a two-year period with provisions for negotiation of three one-year extensions.

Toy Industry Provides New Technique

Manufacturing techniques and methods developed in the toy and recreational vehicle industries are being adapted by the Ventura Division to manufacture defense products. The division's new rotational molding machine is capable of producing hollow plastic parts such as aircraft fuel tanks, ducts and map cases in less time and at less cost.

PPD Receives V-7 Contract

Precision Products Department (PPD) has recently been awarded a government contract to build 36 new GI-V7 gyroscopes for the Navy's Ships Inertial Navigation Systems (SINS). The contract is in addition to the present contract for 57 of the same gyro.

Electronics Division Reaches AWACS Milestone

A major Electronics Division milestone was achieved Dec. 12, with delivery to the Boeing Co. of the last of five pre-production navigation systems for the USAF's Airborne Warning and Control System (AWACS) E-3A aircraft. The Avionics Dept. has begun work on the first of six production systems, with deliveries to start in March 1976.

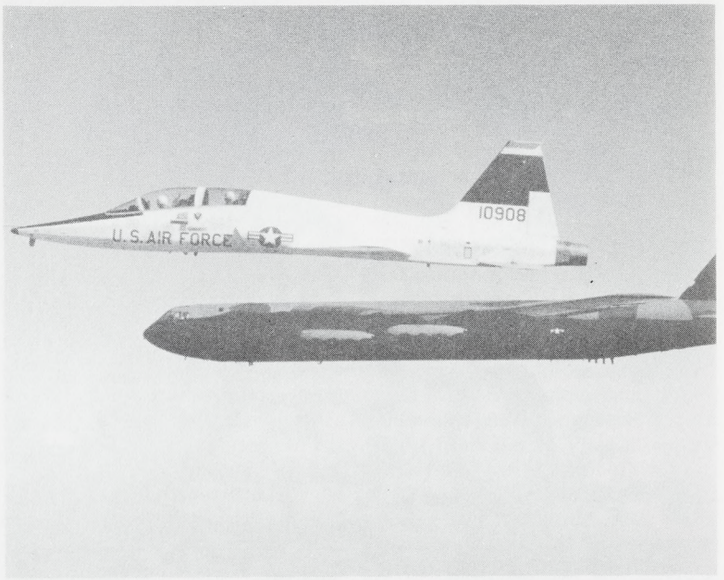
MX Team Relocates

The Electronics Division's 170-member MX Programs Department has moved from Palos Verdes to the Hawthorne facility and is now fully engaged in the initial hardware design phase of the MX/AIRS program. Special test equipment and facilities are being added.

Sun-Planet Alignment Could Change Climate

The alignment of the sun and planets may furnish a future means of forecasting climate changes, according to a theory developed by H. P. Sleeper, NSI-Huntsville. Sleeper suggested that earth weather may be more affected by the solar magnetic alignment of the sun and planets.

T-38 Paces Boeing's B-52D



A SUPERSONIC T-38 paces Boeing's first D model B-52 for airspeed calibrations during a flutter test about 22,000 feet above western Kansas. Boeing used Northrop T-38s as chase and pace jets during a seven-flight program recently on the No. 1 B-52D in an 80-airplane program to extend the bombers' service life. (Boeing Wichita Photo)

Another First for Northrop

A joint Northrop-Air Force effort, Nov. 21, at Palmdale turned into what old-timers call another Northrop first.

"This is the first time a Northrop aircraft has completed its entire flight acceptance program in a single day," said Buck Benson and Lem Hosier, flight line supervisors.

The F-5E, R1175, bound for duty with the USAF at Nellis AFB, Nev., was off at 8:30 a.m. in the first step of company acceptance; off a second time at 11:30 a.m. for a radar check flight; then off a final time at 3:55 p.m. for an Air Force acceptance flight.

The pilots were Northrop's Richard "Rich" Richins for the first two flights and Lt. Col. Len Morgan for the final flight.

FIRST F-5E ASSIGNED to the 65th Fighter Weapons Squadron (FWS) arrives at Nellis AFB, Nev. The aircraft will be used for tactical combat training to simulate aggressor aircraft. This type of training formerly performed exclusively by the 64th FWS using T-38 aircraft, will now be shared with the 65th FWS receivers of the F-5E aircraft. Sitting on the ladder is Sgt. Michael Lagueux, crew chief. From left are S/Sgt. Christopher Columbus, S/Sgt. Richard Fred, Sgt. John Tolbert, Airman Louis Thornton, Lt. Col. Don Madonna, commander, S/Sgt. Acey Atkinson, M/Sgt. Richard Sturgeon, F-5E section chief, and Don Heywood, Northrop Field Service technical representative, Aircraft Division.

Northrop Newsmakers

• **JOHN B. KUYER,** Facilities Department, Aircraft Division, received a plaque commemorating his acceptance in the 1976 Bicentennial Edition of "Notable Americans of the Bicentennial Era." This was added to other past recognitions such as being listed in Marquis' "Who's Who in the West," "Who's Who in America," and "Who's Who in California," 1975 edition.

Eunice Waklee

• **EUNICE WAKLEE,** serving on an overseas assignment for Northrop for the past three years, was awarded her 20-year service award last month.

• **PRISCILLA FLORENCE** has been appointed to the position of corporate manager, Employment, reporting to H. M. Carson, director, Organization and Management Development.

• **ED SCHWARZE,** Processing Engineering and Control, Electro-Mechanical Division, made a presentation to the California Circuits Association on "Preparation and Interpretation of Printed Circuit Boards Metallurgical Specimens."

• **JOHN L. REDDING,** manager of Maintainability, Reliability and Safety, Ventura Division, presented two papers at the recent corporate symposium on Maintainability, Reliability and Safety at the Northrop Research and Technology Center. Reddings' papers were, "Northrop Failure Reporting System," and "Design to Cost Principles."

• **PATRICIA PATES,** research analyst, Aircraft Division, presented an award-winning paper entitled "Maintainability Estimating Relationships" at the Maintainability Engineering and Management Course Symposium. Co-authors were Aircraft Division's **DONALD GREGOR,** manager, and **DONNA HARMON,** research analyst, Maintainability and System Support Department.

• **RICHARD CARLSON,** data processing engineering specialist, Northrop Data Processing, and his wife, Virginia, have been elected co-presidents of the "Friends of the Arboretum," a volunteer organization which is helping to get the California State University-Fullerton Arboretum started. Carlson is also vice president of the foundation.

• **ALAN TROOP** was named corporate director, Insurance Administration.

Northrop Representative Dies in Madrid

MANUEL ALONSO ALONSO, who has represented the Northrop Corporation in Spain for 13 years, died early this month in Madrid, after a prolonged illness. He was 56.

Colonel Alonso joined Northrop as a consultant in August 1962 after a distinguished career as an officer in the Spanish Air Force. Since 1967 he served as regional director and manager of the corporation's activities in Spain. He was widely known and respected in Spanish military government and industrial circles and within the European aerospace community.

During Colonel Alonso's association with Northrop, the company's activities in Spain grew dramatically. Northrop acquired a 24 per cent interest in Spain's leading aircraft manufacturing firm, Construcciones Aeronauticas, S.A. (CASA), and Colonel Alonso represented the company as a member of CASA's board of directors. In 1965 Spain purchased 70 F-5A and F-5B fighters, which were built under license by CASA. During recent years Northrop also became a participant in a number of joint venture companies in the communications and electronics fields. These include Page Iberica, S.A., an affiliate of Page Communications Engineers, and Electronica Basica, S.A. (ELBASA), a manufacturer of telephone equipment.

"Manuel Alonso's experience and reputation within the Spanish community helped make it possible for us to understand and participate in the development of Spain's aircraft, communications and electronics industries," said Thomas V. Jones, Northrop president and chief executive officer. "His energy, enthusiasm, and dedication will be missed by all."

Lloyd Retires After 34 Years, Lynch Named Sr. V-P Operations

After more than 34 years of continuous service with Northrop, Mr. F. W. Lloyd, Senior Vice President of Operations, has elected to retire at the end of this year. In making this announcement, Mr. Thomas V. Jones, President and Chief Executive Officer, said, "There is no way in which I can adequately measure or describe the magnitude of Bob Lloyd's contributions to the success and growth of Northrop over this long period which spans almost the entire life of the company. He has had a singular role in the programs that have brought Northrop to its leadership position in the aerospace industry."

Mr. Frank W. Lynch has been elected to succeed Mr. Lloyd as Senior Vice President of Operations. Mr. Lynch has served since January of this year as Senior Vice President of Administration and his administrative responsibilities are being transferred to his new office.

Mr. Lynch joined Northrop in 1950 and has served in a number of technical and management capacities. From 1969 to 1975 he was Corporate Vice President and General Manager of the Electro-Mechanical Division.

Mr. Lloyd began his career with the company as an Assembler and quickly rose to the position of Foreman. He then became a General Foreman, Superintendent of Manufacturing Control, Assistant Factory Manager, Manager of Manufacturing Engineering, Norair Vice President - Manufacturing, Norair Vice President and Assistant General Manager - Operations, Corporate Vice President and General Manager, Aircraft Division and finally, Senior Vice President, Operations of the Corporation. He also was elected a member of the Northrop Board of Directors.

"This is indeed a unique record and one unparalleled within the company," Mr. Jones stated. "Mr. Lloyd has demonstrated outstanding ability in every position he has held together with the highest possible degree of loyalty and devotion to the company and its people. He has earned the lasting friendship and highest respect and admiration of all of us at Northrop and of our customers and countless others who have come to know him." On behalf of every employee, Mr. Jones wished Mr. Lloyd and his family "all the very best in the retirement he has so richly earned and so greatly deserves."

In November, Mr. Lloyd was honored as the industrialist of the year by the Los Angeles Chapter of the Society of Manufacturing Engineers.

• **BARRY W. FORTLAGE,** appointed supervisor, Analog Electronics and Power Supply Development unit, Electronics Division. Fortlage, for the past 10 years, has been with Xerox Corporation, El Segundo.

• **DARRELL WELSH,** ARPV project manager, Engineering, Ventura Division, attended the second ARPV Technical Interchange Meeting at Wright-Patterson AFB, Ohio. The Ventura Division is under contract to the Air Force to study new concepts for an Advanced Remotely Piloted Vehicle.

• **N. S. "SMOKEY" ALLEN,** service publications writer, Aircraft Division, has been initiated as a permanent member of the Sigma Psi Chapter of Alpha Gamma Sigma, the California Colleges Honor Society. Allen is also a member of Alpha Eta Rho Aviation Fraternity at Cypress College and has made both the President's and Dean's Honor Roll. He will next begin work towards his master's degree in business administration under the Northrop Educational Refund Program.

Tito Lassalle

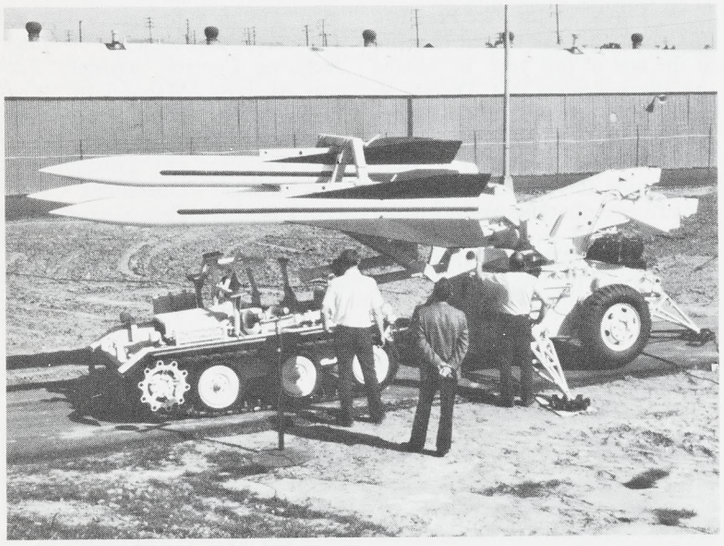
• **TITO LASSALLE,** senior designer, F-18 Configuration Integration, Aircraft Division, published his first Spanish musical composition, "Mi Francesita," in November with Music Suite Publishing Company of Hollywood. Lassalle said, "It was just a song I made up around the house and decided to put a melody to it."

• **WILLIAM T. GORDON,** Northrop Services, Inc.-Houston, received his bachelor of science degree from Abilene Christian College. He began working for his degree in 1974.

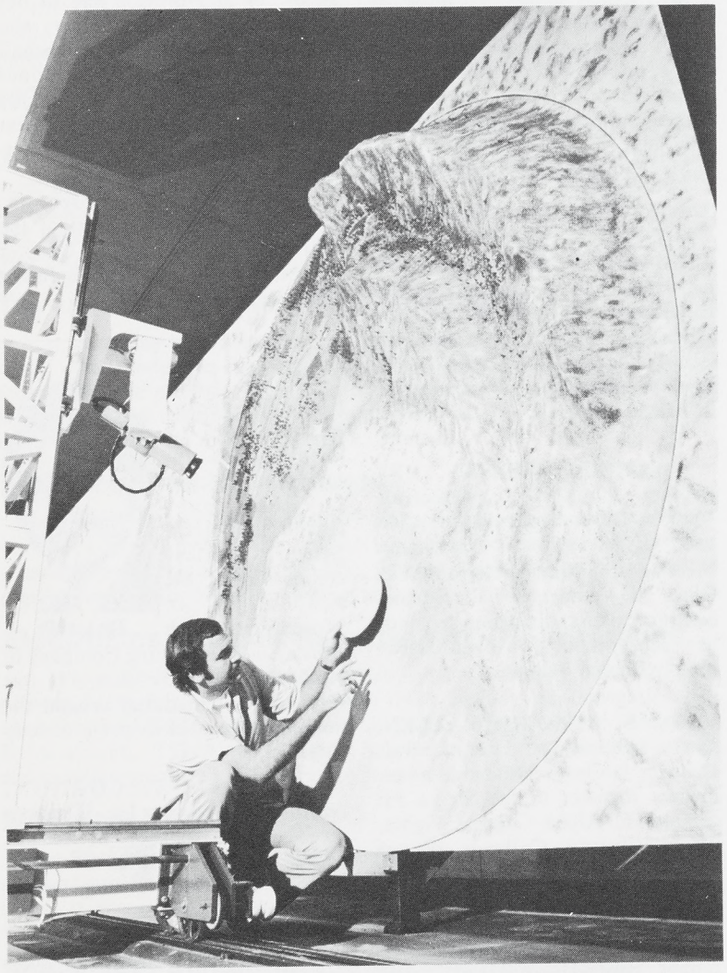
• **O. S. LECKLITER,** appointed supervisor, Operations Planning unit, Electronics Division. Before joining Northrop, Leckliter was with Electronic Memories and Magnetics.

Highlights of Northrop A

It Has Been Another Good Year



THE HAWK PROGRAM, now in its 21st year, continues to produce multi-million dollar contracts for the Electro-Mechanical Division.



ROTATING THREE DIMENSIONAL terrain model is checked by James Swistak during test of Northrop's new Terrain Simulator Facility at its Ventura Division. Television camera on motorized gantry is remotely operated from control room where operator can 'fly' simulated Remotely Piloted Vehicle (RPV) and watch on display console screen. Newest engineering tool is part of extensive capability in RPV's.

JANUARY:

- Aircraft Division delivered first F-5 aircraft to government of Brazil.
- Defense Systems Department, Rolling Meadows, Ill., formerly the Hallicrafters Co., a Northrop subsidiary, became a fully integrated department of the Electronics Division.
- Precision Products Department, Norwood, Mass., receives initial production orders for Flakpanzer tank gunsight stabilization, using the GR-G5 rate gyros.
- Electro-Mechanical Division received an additional $6 million contract for launchers, loaders and boom, and installation kits for the Improved HAWK missile system. The division has worked on the HAWK program since 1954.
- Ventura Division unveiled the Terrain Simulator Facility for validation of Remotely Piloted Vehicle concepts.
- Page Communications Engineers, Inc. completed Phase I, the study phase, of a contract for a communication system along the 500-mile route of the planned Petro-Peru Northern Peruvian Oil Pipeline. The study phase involved the surveying and selection of 23 sites for microwave towers along the pipeline route.

FEBRUARY:

- Northrop Services, Inc. was awarded a $9 million contract, the third regular yearly segment of a five-year support contract for NASA's Johnson Space Center, Houston, Tex.
- Northrop Architectural Systems selected to furnish Arcadia curtainwalls and windows for the 16-story Crillon Hotel, La Paz, Bolivia.
- Aircraft Division F-5 aircraft in service around the world passed the one-million flight hour milestone.
- Electronics Division awarded $3.4 million contract from USAF's Space and Missile Systems Organization (SAMSO) for development of advanced computer technology for USAF's Advanced ICBM Technology Program.
- Ventura Division received a $9.1 million follow-on contract from the U.S. Navy for continued production of the MQM-74C target aircraft. The contract calls for production through December 1976.
- Page Communications Engineers, Inc. awarded a contract from the Democratic Republic of Sudan for engineering, furnishing and installation of equipment for the country's planned microwave telecommunication system. The Sudan National Communications System is part of the Pan-African telecommunications network and will link the countries of Eastern and Central Africa by telephone, telex and provide communications within Sudan.
- U.S. Navy testing of the Electronics Division ARN-99-V2 Omega navigation system aboard F-4B aircraft marked first time system has been tested in a tactical fighter at supersonic speeds.

MARCH:

- Aircraft Division marked first delivery of F-5E to U.S. Navy at Naval Air Station, Miramar, Calif., for Top Gun air combat maneuvering training.
- The NASA Group Achievement Award was presented to Northrop Services, Inc.'s Earth Resources Experiment Team in recognition of their contributions to the Skylab Earth Resources Experiment.
- A total of 70 pints of blood were added to Ventura Division's account in the Tri-Counties Blood Bank as a result of first Blood Bank Day at the division since 1969.
- Defense Systems Department received $1 million contract from USAF for prototype countermeasures power management system for the B-52 strategic bomber. Successful contract completion expected to result in production of several hundred systems for B-52s.
- Page Communications Engineers, Inc. completed design and engineering of a consolidated broadcast facility to accommodate all television, FM and mobile radio communications in Rio de Janeiro, Brazil.

APRIL:

- Electronics Division completed successful operational and development testing of AIDATS (Army In-Flight Data Transmission System) by the U.S. Army at Ft. Huachuca, Ariz., leading to $3.5 million production engineering contract in one of division's promising programs.

o Achievements for 1975

Year for Northrop and Its People

• George A. Fuller Company completed restoration of Cooper Union, a national landmark in New York City; the building in which Abraham Lincoln made his opening bid for the Presidency.

• Ventura Division received study contract for $499,000 from U.S. Air Force to design an Advanced Remotely Piloted Vehicle (ARPV).

• Northrop Worldwide Aircraft Services, Inc. received a re-award of contract for support and maintenance of German Air Force and USAF T-37 and T-38 aircraft at Sheppard AFB, Tex.

• Smithsonian Institution requested and received last sewing machine left of the 97 used to produce the parachutes used in the Earth Landing Systems the Ventura Division manufactured for the U.S. Manned Space program. Machine will be displayed in Smithsonian's New Air and Space Museum.

• Electro-Mechanical Division's conversion to new lighting guidelines, reducing footcandles in some working areas, added an additional 15 per cent energy saving to the division's already outstanding energy conservation program.

MAY:

• Ventura Division received $3.1 million extension to current contract to provide aerial target system services at NATO Missile Firing Installation (NAMFI) on island of Crete.

• Northrop Architectural Systems introduced control color anodizing which will improve quality and make it easier to color match products.

• Northrop Worldwide Services, Inc. opened new corporate office headquarters in Lawton, Okla.

• At Aircraft Division U.S. Navy announced its selection of the Northrop/McDonnell Douglas design as the basis for its new F-18 Air Combat Fighter.

• Electronics Division wins highly competitive $32 million USAF contract to design and develop Advanced Inertial Reference Sphere for USAF's Advanced ICBM Technology Program. Contract, culmination of five years of dedicated effort, is potentially one of the most important programs in division's history.

• Aircraft Division F-5 aircraft marked entry into the inventory of the Royal Malaysian Air Force at ceremonies held at Butterworth AFB, Malaysia.

• Aircraft Division's F-5F was approved by U.S. Air Force for full-scale production.

JUNE:

• Aircraft Division F-5E and F-5F flight demonstrated at 31st Paris Air Show.

• George A. Fuller Company completed the two-million-square-foot Distribution Center for J.C. Penney Company in Columbus, Ohio.

• Ventura Division received a $1.5 million Air Force contract for system definition and flight demonstration of a Tactical Expendable Drone System (TEDS). Northrop's TEDS concept is based on proven design of MQM-74C target aircraft.

• Electro-Mechanical Division awarded an $800,000 contract from the U.S. Army's Night Vision Laboratory. It provides for the division to supply a day/night airborne target acquisition/recognition system for technical evaluation of advanced helicopter tactical tests.

• U.S. Army announced re-award of contract to Northrop Worldwide Aircraft Services, Inc. for support services at Ft. Rucker, Ala. Ft. Rucker contract became the longest on-going support program Northrop Worldwide Aircraft Services, Inc. has undertaken. Initial contract was let in 1964.

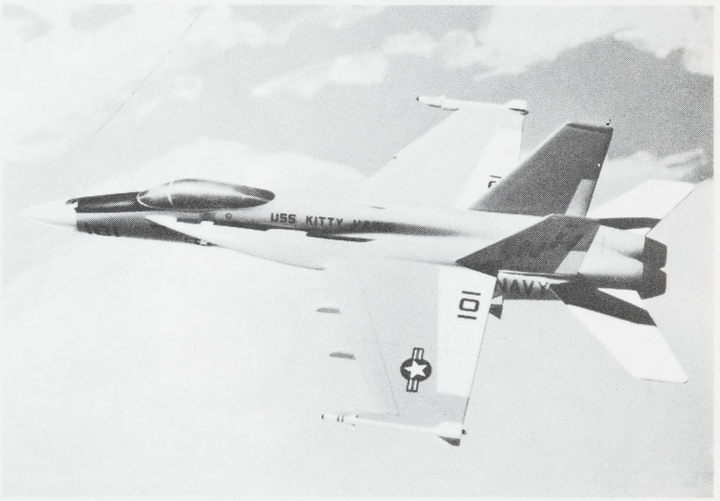
• Electronics Division was awarded $4.7 million contract from the Boeing Co. to supply integrated navigation systems for six production versions of USAF's Airborne Warning and Control System (AWACS) E-3A aircraft.

• Northrop Research and Technology Center received a joint contract with Electronics Division to build medium power airborne laser system.

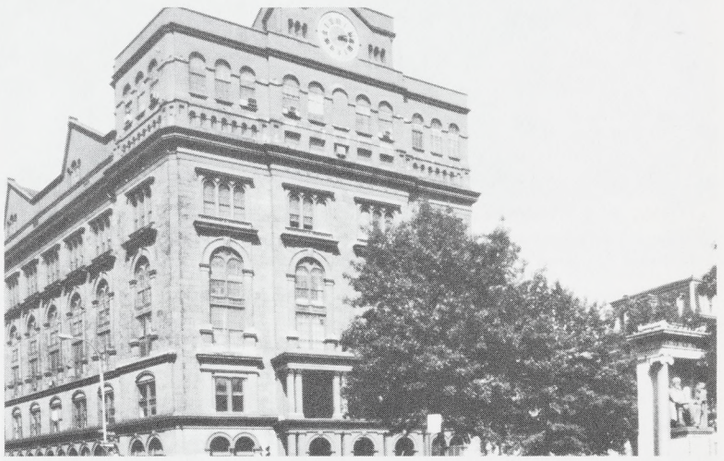
JULY:

• Electro-Mechanical Division's Logistics Group received a Suppliers Performance Award from Lockheed Missiles and Space Company for outstanding work on the Fleet Ballistic Missile Program.

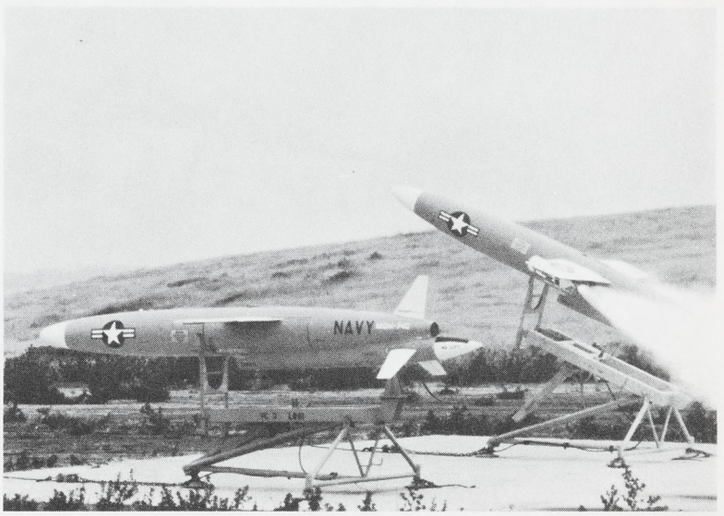
(See HIGHLIGHTS, pages 8 and 9)



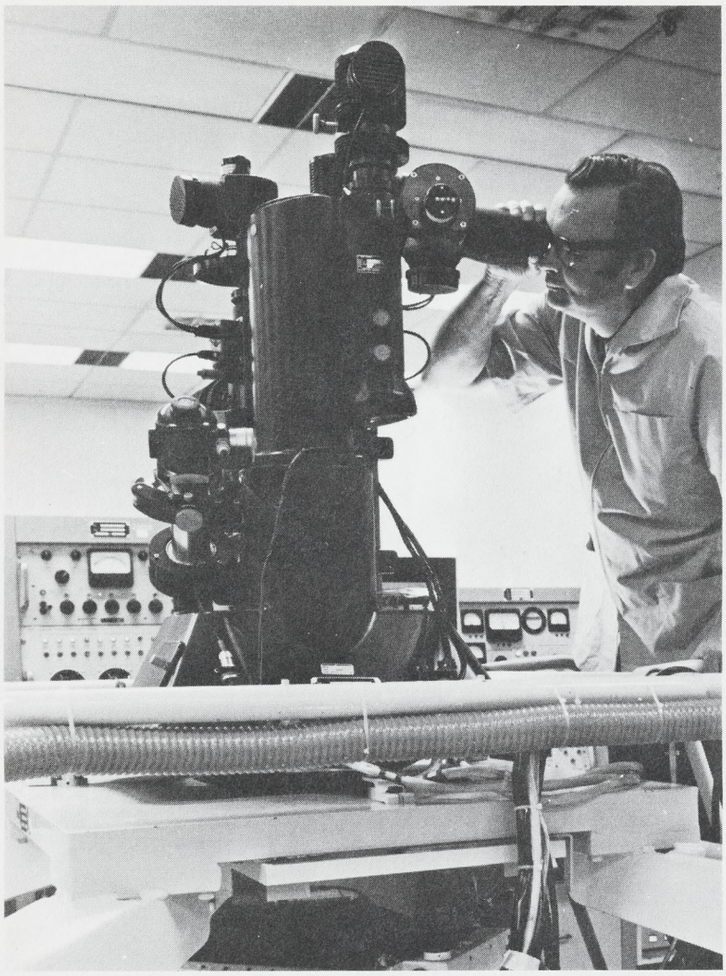
MODEL OF U.S. Navy/Marine Corps F-18 Air Combat Fighter which will be produced jointly by Northrop, McDonnell Douglas team and General Electric.



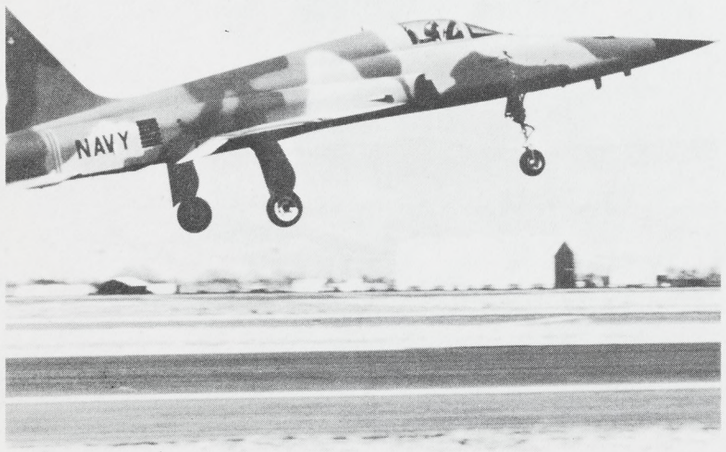
GEORGE A. FULLER Company completed restoration of Cooper Union in two years. It is now a new building in an old shell as it stands in Cooper Square in New York City.



UP, OVER AND AWAY goes a Northrop Ventura Division MQM-74C target aircraft. A second target awaits its turn. Target was launched by personnel from Navy Fleet Composite Squadron-3, North Island Naval Air Station.



AIMING FOR STARS, Electronics Division technician calibrates an astro-inertial guidance system for the U.S. Air Force using a star signal simulator. Avionics Dept. has established Northrop's leadership in this most-accurate form of navigation/guidance.



F-5E TIGER II IN Navy camouflage scheme lifts off runway at Palmdale flight acceptance facility during test flight. The Navy procured five of the Tiger IIs for use in the Top Gun Fighter Weapons School at Naval Air Station, Miramar, Calif., to simulate flight characteristics of enemy fighter aircraft.

Northrop Highlights

(Continued from page 7)

• Aircraft Division flight demonstrated F-5F in Morocco and Tunisia at the request of the two governments marking first appearance of the two-place combat capable version of the F-5E on the African continent.

• Ventura Division MQM-74C target aircraft became operational with U.S. Pacific Fleet following successful launchings at San Clemente Island. Target became operational with Atlantic Fleet earlier in year.

• Aircraft Division produces main fuselage sections and flooring for the 747 basic superjet as well as the Boeing 747SP (Special Performance) airliner which made its first flight.

• Electro-Mechanical Division produced first of 14 projected SACE — Shorebased Acceptance Checkout Equipment — and was delivered to Lockheed Missiles and Space Company. SACE will be used for factory and Navy site checkout of TRIDENT I (C-4) missiles. Delivery was on time despite complications due to necessary design changes.

• Ventura Division's Chukar 003 target aircraft completed its 45th successful mission from NAMFI on Crete. Target has been in use for more than four years.

AUGUST:

• Northrop Services, Inc. signed contract for technical support to the National Center for Toxicological Research at Jefferson, Ark.

• Aircraft Division received announcement that U.S. Marine Corps will replace all 12 of its F-4 fighter/attack squadrons with the Navy F-18 being developed by the Northrop/McDonnell Douglas team.

• Ventura Division Earth Landing System performed flawlessly with successful landing of Apollo/Soyuz Test Program by astronauts marking end of division's involvement in U.S. Manned Space Program.

• Aircraft Division delivered first F-5F to government of Jordan.

• George A. Fuller Company opened new office in Hawthorne, Calif., to start design and procurement of the Peace Hawk Construction Program.

• Precision Products Department won significant contract to test and evaluate its NIS-210-24 strapdown inertial system for feasibility and performance potential by USAF. The department also won contract for rate gyros for Air Force F-16 and A-10 aircraft.

SEPTEMBER:

• Defense Systems Department won a $25 million contract from USAF for initial production of internal countermeasures sets (ICS) for USAF's F-15 air superiority fighter. The department's expertise in demanding countermeasures field credited with winning this major award — with potential value to Electronics Division of more than $100 million.

• Ventura Division's Torpedo NT-37C first deck tube launches proved successful at Naval Torpedo Station, Keyport, Wash. Torpedo now has capability for firing from decks of fast-moving torpedo and coastal patrol boats and destroyers.

• Page Communications Engineers, Inc. completed engineering and design contract for a microwave communications system for the Louisiana Offshore Oil Port, Inc., the first facility of its kind to be built in the U.S. Page provided analysis and design of all communication and radio navigation system requirements for the deep-water, off-shore oil port, a platform complex 20 miles out in the Gulf of Mexico off Louisiana coast, and associated on-shore facilities.

• Northrop Architectural Systems supplying curtainwalls for the new Rush Presbyterian St. Luke's Medical College Dormitory in Chicago, Ill.

• George A. Fuller Company re-entered international construction market with negotiation of a contract with ARAMCO for two hospitals in Saudi Arabia.

• Energy usage continued to drop at Electro-Mechanical Division. Average kilowatt hours dropped from 1504 kwh per employee in 1972 to 833 kwh per employee during the first half of 1975.

• Ventura Division's 400th MQM-74C target aircraft rolled off production line marking the 2168th target in MQM-74C series produced for U.S. Navy.

• USAF Thunderbirds performed 100th aerial demonstration since switching to the Aircraft Division supersonic T-38. Show was at Hamilton AFB, Calif.

Another Good Year

OCTOBER:

• General Accounting Office lauded the Four Cities Program for transfer of aerospace technology to study of urban problems. Northrop Services, Inc. participates in the program through assignment of Dr. Owen Griffith to the city of Anaheim.

• Royal Norwegian Air Force pilots won NATO Bull's Eye weapons delivery meet in Aircraft Division F-5A bringing F-5 record in worldwide competitions to 25 wins out of 29 formal meets.

• Northrop Worldwide Serices, Inc. negotiated management contract with Iran Aircraft Industries, Inc. to furnish advisory and technical services in support of aircraft overhaul and maintenance facilities.

• Precision Products Department began construction of a new 53,000-square-foot engineering facility in Norwood, Mass. The department also was awarded follow-on contract from Raytheon for rate integrating gyros for SAM-D (surface-to-air) missile project.

• Aircraft Division F-5Es assigned to NATO forces in England for dissimilar aircraft training and to augment NATO air defense forces.

• Northrop Architectural Systems products are used in transformation of swamp land into highly desirable residential areas in Secaucus, N.Y.

• Page Communications Engineers, Inc. completed, with commendations, the first year of providing installation and maintenance services for the Trans-Alaska Oil Pipeline communications system.

• Aircraft Division delivers first F-5E to USAF for aggressor aircraft training at Nellis AFB, Nev.

• First Certified Round Lot Acceptance (CRLA) test of Improved HAWK missile using modified MQM-74C target was successful at Army's White Sands Missile Range, N.M. Ventura Division is providing a minimum of 12 flights during current fiscal year.

• Aircraft Division completed F-5F basic full-scale development flight test program at Edwards AFB.

• Electronics Division Strategic Systems team developed miniature wire hardened memory, weighing 1.7 pounds, under Air Force Materials Lab/SAMSO program.

NOVEMBER:

• Electro-Mechanical Division's million-dollar machine shop modernization enters final stages. Modernization includes installation of five numerically controlled cutting machines which will improve productivity and increase cost effectiveness.

• Aircraft Division receives word that U.S. Senate overwhelmingly endorsed funding of U.S. Navy/Marine Corps F-18 Navy Air Combat Fighter, completing congressional approval process.

• Northrop Research and Technology Center was notified by the U.S. Patent office that two patents had been issued, now totaling five for the year, applying primarily to the laser device and technology areas.

• Ventura Division dedicated Bicentennial flagpole with employees and Thousand Oaks High School band participating. Plaque marking dedication was unveiled.

• Aircraft Division performed F-5E structural tests passing the 24,000-hour mark thus certifying the F-5E as a 6000-hour airplane.

• Ventura Division's electrical energy conservation program will be included in federal case study book being prepared by Federal Energy Administration as model of a successful program.

DECEMBER:

• Northrop Research and Technology Center was awarded a major high-power laser optics contract.

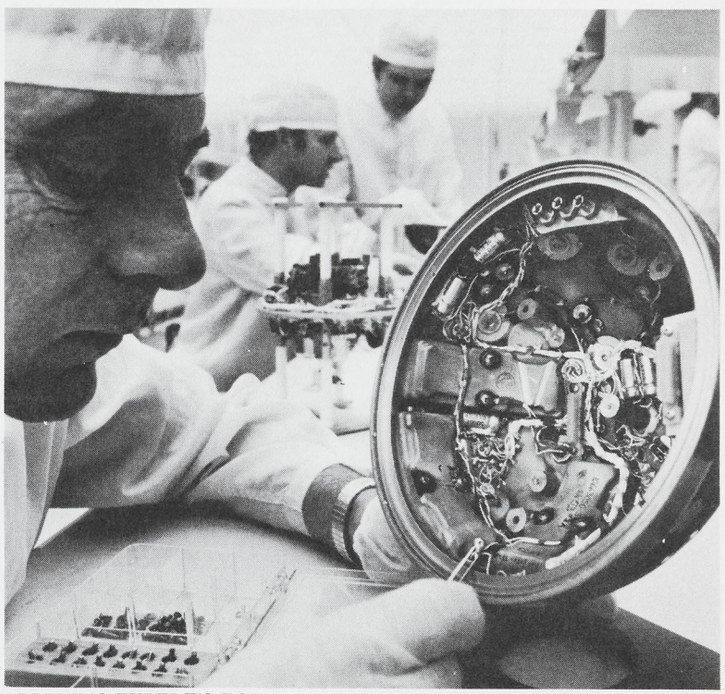
• Electronics Division MX/AIRS program moves into initial hardware design phase including breadboarding of circuits and component characterization. Some 170 members of the MX Programs Department move from Palos Verdes to Hawthorne facility for this phase of key program.

• Aircraft Division's U.S. Navy/Marine Corps F-18 received full-scale development go-ahead from Defense Systems Acquisition Review Council.

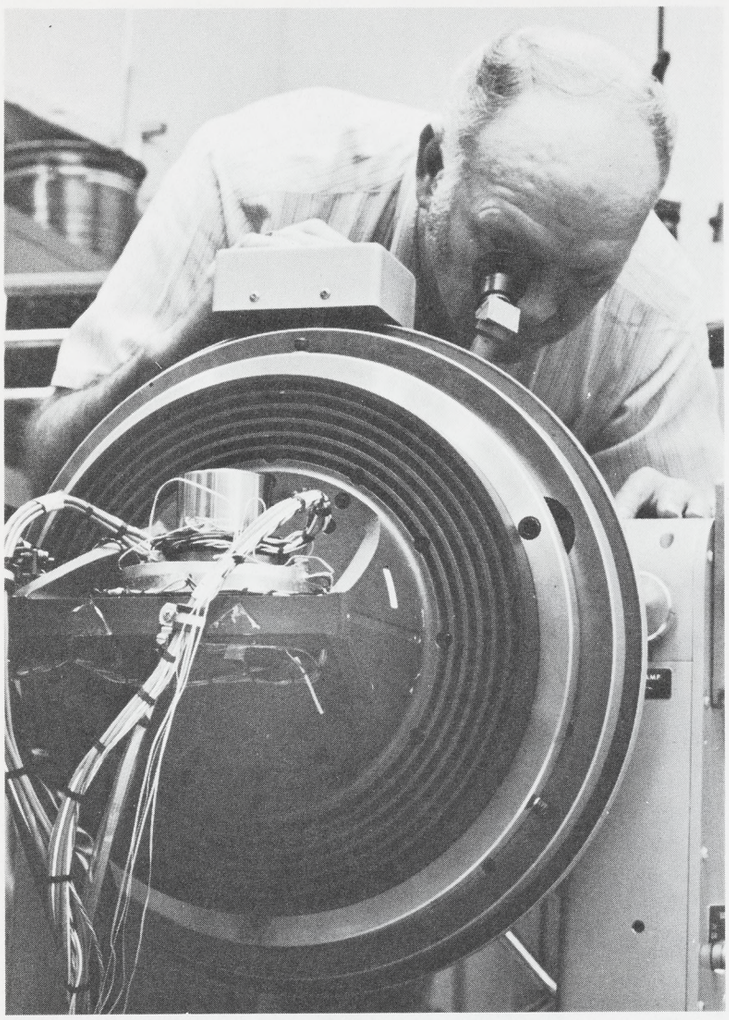
• Electronics Division delivered last of five pre-production navigation systems for USAF's AWACS E-3A aircraft to Boeing.

• Electronics Division awarded contract for the development of design specifications and fabrication of a prototype system which will be utilized to automate the processing and interpretation of data.

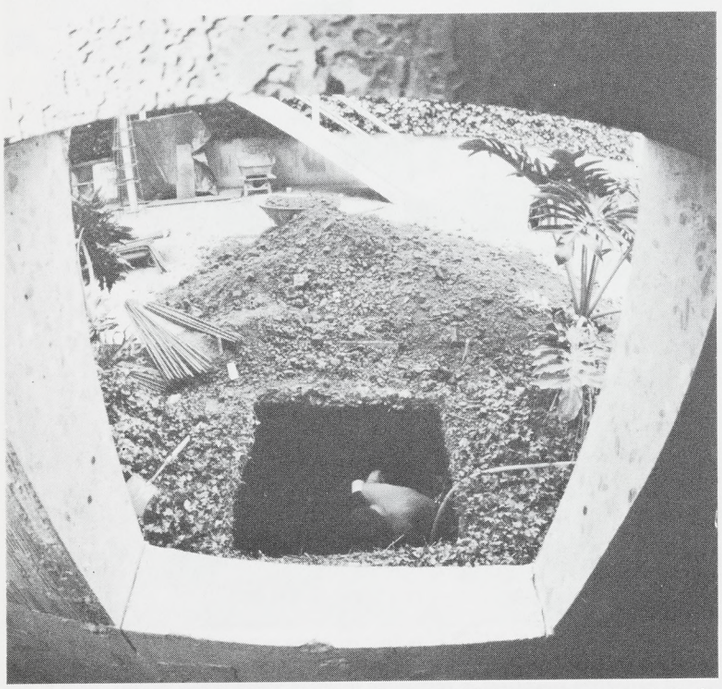
GETTING THE FIRST SACE ready for shipment, Lidia Herrera, foreground, Helen Sayones and Lilliam Southard, Electro-Mechanical Division, work on assemblies.



APPLYING EXPERT'S TOUCH to Inertial Measurement Unit (IMU), Electronics Division technicians are engaged in production, repair and overhaul of USAF C-5A inertial navigation equipment in continuing program which began in 1967. Skill in development and production of such sophisticated guidance systems led to the division's winning major contract for design and development of inertial guidance unit for USAF's Advanced ICBM Technology Program.



TESTING ACCELEROMETER, one of third generation inertial instruments being used in Advanced Inertial Reference Sphere (AIRS) for the USAF's Advanced ICBM Technology Program, Royce Wright, engineering technical assistant, measures output of unit mounted on test stand. Accelerometer, known as SFIR-J, was designed by Draper Laboratory, is produced by Honeywell.



FRAMED BY WINDOW cut in side of Hawthorne facility, workman prepares site for concrete pier to support Theodolite which will be used to provide precise azimuth alignment for testing of AIRS system. (Photos by John Lewis)

MX/AIRS Design Phase Underway at Hawthorne

The Electronics Division's 170-member MX Programs Department, which recently moved from Palos Verdes to the Hawthorne facility, is now fully engaged in the initial hardware design phase of the MX/AIRS program.

At the same time, office space is being realigned and test facilities and equipment are being added.

Current activity includes design and breadboarding of circuits, and component characterization — a highly important part of the program which involves determining the performance envelope of system components under various conditions.

Key Challenges

One of the key challenges is designing instrumentation for test of the components and system in the MX/AIRS program, said Roy Jackson, MX Programs Dept. To assist in these tests, several facilities are being added to the Hawthorne facility.

Currently being constructed are: a system test isolation pier which isolates the system under test from any building vibration, and a precision Theodolite isolation pier. The Theodolite sights on Polaris, the North Star, to provide precise azimuth alignment for the AIRS system testing.

The MX Programs Dept., headed by George Fritzel, manager, is involved in design and development of an Advanced Inertial Reference Sphere (AIRS) for the USAF's Advanced ICBM Technology Program (MX) under a $32 million contract received last May from SAMSO.

Critical Milestones Passed In MX Computer Program

The Electronics Division has passed critical milestones in its ACT I (Advanced Computer Technology Program) with completion of the parts design review and successful testing of candidate CMOS (complementary-metal oxide-semiconductor) devices by the U.S. Air Force.

Additional CMOS and MNOS (metal-nitride oxide-semiconductor) test vehicles were also built and evaluated.

"We are now proceeding into the conceptual computer design phase of the program," said Herb Stark, deputy manager, MX Programs Dept.

The program is being conducted under a $3.4 million contract awarded to the Electronics Division by USAF's Space and Missile Systems Dept. (SAMSO) for development of advanced computer technology for the USAF's Advanced ICBM Technology Program.

Covers Two-Year Period

The contract, covering a two-year period, calls for development of critical large scale integration (LSI) components for the MX guidance system computer. Northrop is responsible for defining the computer system — including central processor logic, temporary and permanent memory systems, computer instructions and key system interface criteria.

When completed, total program objectives are to demonstrate the maturity of both CMOS and MNOS technologies for use in advanced missile technology programs.

Division Participates In Corporate Meet

Electronics Division representatives from the California departments as well as Precision Products Dept., Defense Systems Dept., and Northrop Dakota, Inc., attended the third Corporate Safety, Reliability and Maintainability Seminar held Nov. 12-13.

Welcoming the attendees was Donald Warner, Aircraft Division vice president, Technical, and Dr. Richard Schamberg, corporate director, Technology Applications. The seminar was hosted by the Aircraft Division and held in the Northrop Research and Technology Center.

Held biannually, the seminars enable all areas of the company to exchange and approach new ideas for control of safety, reliability and maintainability of Northrop products. Altogether, 14 workshop/sessions were held during the two days.

Attending the seminar were Don Smith, Bob Bacon, Woody Sherwood, William Phillips, Bob Adel and Abe Osborn, Avionics Dept.; Brian Klatt, Joe Comiskey and George Reagan, Precision Products Department; Jay Leek, Defense Systems Dept.; and D. G. Ryan, Northrop Dakota, Inc.

Classified

A free service for Northrop personnel only. The right to edit or omit ads is reserved. Ads limited to three items per employee, and separate ad forms must be submitted for each category of items. Deadline is Monday of the week preceding publication date, which is normally the third Wednesday of each month.

Vehicles For Sale

Pontiac, 1969 Custom S., 2-dr., h/top, 30,000 mi., radio, a/c, p/s, auto. trans., $650. 714-893-8098.

Ranchero, 1968, p/s, p/b, a/c, camper shell, $1650. 213-641-9813.

Van, 1974 Dodge, ½-ton, 16,000 mi., $5300. 213-370-8229.

Motorcycle, 1973 Yamaha 250cc Enduro, $550. 213-865-7239.

Austin Sprite, 1969, 33,000 mi., new tires & batt., role bar, $1000. 213-392-3467.

Pontiac, 1965 LeMans, convt., less than 58,000 mi., V8, 326 eng., p/s. & radio, $650. 213-293-6494.

Motorcycle, 1973 Yamaha 100cc MX, $400. 213-924-2790.

Ford, 1970 Torino, 4-dr. sed. & Honda, 1971, 600, 2-dr. sed., new Michelins, $2200. 805-497-4187.

Toyota, 1969 Corona Mk II, a/t, a/c, AM/FM radio, $1300. 213-679-9798.

Motorcycles, 1974 Montesa 250 Enduro, 100 mi., $800; Honda CB100, 115 mi., $200. 213-675-2488.

Chevrolet, 1964 Impala, 283 2-bbl., p/s, p/b, r/h, $200. 714-638-0230.

Motorcycle, 1975 Honda CL360K, $850. 714-960-2027.

Datsun, 1969 510, 4-dr., 4-spd., completely rebit., $850. 213-924-3482.

Motorcycle, 1975 Honda XL350, completely o/ hauled, $800. 714-836-8296.

Motorcycle, 1970 Bultaco 250, new top end, tires, seat & clutch, $250. 213-630-3888.

Continental, 1970, full power, many extras, $2000. 805-498-1636.

Camaro, 1972 350 SS, auto., a/c, p/s, p/b, spoilers, $3000. 213-541-2265.

Volkswagen, 1972 Squareback, sed., r/h, a/c, roof rack, $2500. 805-259-3968.

Lincoln, 1966 Continental, fully equipped, $1000. 213-676-9742.

Plymouth, 1971 Duster, 6 cyl., p/b, p/s, 53,000 mi., a/c, $1500. 213-860-8068.

Buick, 1964 Riviera, Gran Sport, $500. 213-370-4687.

Plymouth, 1968 Custom Suburban wagon, $150. 213-379-7853.

Motorhome, 1972 Mini, 18' Williamscraft, Dodge 360 eng., fully self-contained, extras, $9500. 213-644-5345.

Fairlane, 1958, 40,600 act. mi., orig. owner, new Diehard battery, r/h, $175. 213-676-4734.

Oldsmobile, 1969 442, 4-spd., $800. 213-299-5438.

BMW, 1970 2002, 40,000 mi., $2600. 213-780-3161.

Motorcycle, 1972 Honda SL-100, stripped for dirt, 45° rear shocks, $250. 213-831-6567.

Audi, 1970 100LS, 4-dr., 4-spd., sunroof, new brakes & clutch, AM/FM Blaupunkt radio, $1700. 213-538-5928.

Motorcycle, 1972 DKW 125MX, Don Vesco eng. & frame, $425. 213-378-9614.

Olds, 1969 Cutlass S, 4-spd., mags, new eng., $1600. 213-274-0589.

Audi, 1971 sta. wagon, 54,000 mi. $1495. 714-987-4073.

Cadillac, 1967 Cpe. de Ville, full pwr., $1200. 213-675-2207.

Motorcycle, Sachs 100cc, dirt, Cornutt shocks, $275. 213-329-4090.

Matador, 1974 4-dr., V-8, auto., $1550. 213-644-9932.

Truck, 1957 ¾-ton, GMC, w/10' camper, new o/haul, $1200. 213-370-7749.

Motorcycle, 450cc Honda, $585. 213-378-5494.

Plymouth, 1968 Roadrunner, 383 auto. hi-perf., $1800. 213-835-0727.

Jaguar, 1969 XKE 4.2, convt., wire whls., $4450. 213-880-4384.

El Camino, 1970, 350 V-8, auto., a/c, p/s, p/b, $1500. 213-833-6654.

Vehicles For Sale

Gran Torino, 1973 Squire sta. wagon, p/s, p/b, a/c, 9-pass., 400 eng., comp. trailer pkg., $3195. 213-860-2948.

Chevrolet, 1969 Malibu, $1000. 213-549-1752.

Corvette, 1963 convt., 340 h.p. 327 eng., 4-spd., h/top, $1975. 805-942-4510.

Motorcycle, 1973 Kawasaki 125, street/dirt F-6 mod., $350. 213-377-9905.

Oldsmobile, 1968 Cutlass S/C, $500. 213-644-4520.

Pickup, 1972 Mazda, B-1600, piston eng., w/cmpr. shell, new mags & radial tires, air shocks & brakes, $2600. 213-367-7298.

Miscellaneous For Sale

Engine, 327 Chev. 250 h.p. w/auto. trans., $200. 213-973-4399.

Organ, Kimball Swinger 500, $650. 213-325-7649, 213-326-3135.

Typewriter, IBM elec., mod. 11C, 24" carriage, $50. 714-644-1195.

Reverb-Amp, fender twin, $400. 213-379-9546.

Spreader, Sears Broadcast, $10; rifle, antique French, 11mm, mod. 1884, $20; rifle, antique Austrian, 8mm, mod. 1895, $20. 714-960-3445.

Stereo, 3-pc. maple, Acousti-Craft, General Electric component, Garrard turntable, 2 Signature spkrs., mod. L.E.8, 24" h., 16½" w., 21½"., cabinet, 32" w., 16½" d., $125. 213-679-2409.

Dining Table, solid maple, rectangular 40" x 60, ext. to 92", needs refinishing, $90; 213-989-0759.

Trailer Hitch, E-Z Lift, complete, ready to install, $75; TT-1 Heath Dynamic, tube tester, $50; oscilloscope, Heath IO4540 5MHz, w/calibrator 62 probes, $275. 714-544-7349.

Head & Footboards, twin, Mediterranean, solid ash, w/metal rails, $120. 213-675-5265.

Firewood, orange, will deliver & stack, $80 cord or $70 if you pickup. 714-735-2724.

Dryer, gas, G.E. deluxe mod., avocado green, used 10 mos., $100. 714-897-9864.

Refrigerator, Hotpoint, dble. door, ice maker & ext. ice door, $200. 714-968-7987.

Chandelier, black wrought iron, $35. 213-378-7285.

Refrigerator-Freezer, avocado green, 13.29 cu. ft. ref., 4.72 cu. ft. convt. refrig. freezer, ice maker, 3 yrs. old, $350. 805-495-7763.

Rifle, Cal. .270 Rem, mod. 700, 3x9 scope & case, ammo & brass, $150. 213-327-1884.

Pre-Amplifier, Dynaco Pas-2, $30; amplifier, Dynaco stereo 70, $30. 213-377-4198.

Clarinet, b-flat, La Sete $75. 213-323-8089.

Surfboard, Greg Liddle, 6'6" l., 22" w., w/leash, $60. 213-784-1246.

Desk, Danish teak wood, matching chair, $100. 213-322-1151.

TV, 12", 1974 Sears b&w, Solid State, batt. packed, $100. 714-558-7485.

Car Radio, Motorola AM pushbutton, 12 v., mon. old, $10. 213-645-7715.

Shock Absorbers, 4 Sears h.d., for 1970-72 Monte Carlo, used 3000 mi., $10. 213-371-2258.

Sofa, 2-pc., straight & curved sects., 9', blue, $75. 213-396-5837.

Range, 30", gas, continuous cleaning oven & attach. warming shelf, $75. 213-328-0388.

Mags, 2 VW 5-bolt, & tires, $25; VW tow bar $15; portable toilet, Tota II, $49. 213-675-5223.

Pup, Sheltie, AKC reg., & pups, born 11-2-75, males, $125. 714-531-3110.

Sewing Machine, General, port. zig-zag, $35. 213-328-4128.

TV, 19" color, Hitachi, 1 yr. old, equipped for cable TV, $250. 213-659-6399.

Life Vests, USCG approved, type III, 1 med., 1 lge., never been in water, $13. ea. 714-842-3903.

Exercycle, $25. 714-838-7161.

Boat, 1973 Chrysler, 17' tri-hull, 70 h.p. eng., on trailer, $2995. 213-541-8181.

TV, near new Sears 13", color, UHF, mod. 4023, $200. 213-534-2579.

Camper, Six Pack, jacks & tie downs, $500. 213-924-2790.

Miscellaneous For Sale

Train Set, HO scale, 12 cars, eng., power pack switch track, 30 pcs. of track, board for layout, $45. 213-676-6352.

Pups, miniature Schnauzer, $75. 213-596-3691.

Couch, floral, beige & brown, $40. 213-325-3041.

Bear Hunting Bow, 55-lb., 28" draw super Magnum 48 w/silencers & bear bow & arrow converta quiver, $80. 213-676-9385.

Parts for Porsche 912, & auto stereo pistons, cyls., camshaft, head, $100; driving light, Hella, spare bulb, $10; cassette, Sanyo FT-433M Am/FM MPX stereo play & record, $100. 213-532-3622.

Motorcycle Stereo, w/AM/FM & 8-track bltin. oil pressure ga. & amp meter, fits any frame mount fairing, mo. old, $200. 805-252-0108.

Catamaran, Aqua-Cat, w/cartop carrier, 12', 6' beam, 90 sq. ft., sail area, fiberglass hull, $300. 213-377-3790.

Snare Drum, & stand, unused, $55. 213-397-6490.

Bicycle, girls sidewalk-type w/training wheels, $8. 213-374-5113.

Mattress, 2 king size twin, Beautyrest, never used, $150 both. 213-377-3858.

Ski Bindings, Tyrolia 120, never used, $30. 714-814-2857.

Wall Mirror, 3'x5', unframed, $45. 213-370-1100.

Stereo, 8' sep. tape deck & spkrs., $180. 213-973-2866, 213-973-5448.

Travel Trailer, 1967 Terry, 17½', fully self-contained, $1100. 213-835-0763.

Clothing, ladies, new & used, sizes 7, 8, 9, shoes, sizes 6, 6½, purses, many items, $1 & up. 213-644-3922.

Sailboat, 23' Erickson, fully equipped, $4200. 213-379-2654.

Piano, spinet, & bench, $645. 213-927-1564.

Tires, wheels, hub caps for small truck, $75. 714-894-7661.

Dryer, Frigidaire, gas, $75; range/griddle, gas, $20; boxsprings & mattress, 2 dble. size, $20. 213-541-7143.

Bicycle, Sears 26", 5-spd., $45. 805-527-6943.

Divan, 5', floral, $75. 213-676-5947.

Trumpet, Olds Ambassador, case, $100. 714-554-4068.

Plant Pole, floor to ceiling, 4 curved hangers, $15. 213-598-2181.

Traver Trailer, 15' Viking, 6 sleeper, $475. 213-677-5820.

Refrigerator, used 3 mos., General Electric, 11.5 cu.ft., gold, $200. 213-675-6660.

Pipes, side, chrome, approx. 69" lg., $60 pr. 714-871-6722.

Microwave bltin oven, Bowmar, $450. 805-495-3065.

Standing Wall Unit, custom-made 6-pc., walnut, incls. 2 base tables, TV cabinet w/rollaway drs., bar, tuner, amplifier & phono., storage, shelves, $275. 213-553-0571.

Washing Machine, Hoover port., white, $20. 213-644-5345.

Typewriter, Royal manual std., stand, $25; wall mirror, gold framed, 30"x40", $30. 213-329-9123.

Typewriter & sewing machine, $20 ea. 213-541-7572.

Firewood, fireplace length, any dia. up to 10", 25¢ log. 213-886-6814.

Dog, Sheltie, male, AKC, 2 yrs. old, $50. 714-846-9445.

Travel Trailer, 1968 Aristocrat, 16', elec./butane refrig., dual butane tanks, $1595; bicycle, Raleigh 10-spd., super course, completely rebit., $165. 213-371-3781.

Zoom Lens, Vivitar, 85mm, 205mm f3.8 auto. type, fits Universal threadmount cameras, stop down metering, auto. diaphragm control, used 4 times, $80. 714-846-7039.

Trailer, alum. teardrop, sleeps 2, tires, light wt., $250. 213-341-5828.

Coaster Bike, woman's, $12.50. 213-376-4831.

Skis, bindings, $25. 213-498-2300.

Trundle Bed, maple, $125. 213-327-2252.

Ski Boat, 1972 Tahiti o/b, custom trailer, $1975. 213-324-1335.

Dryer, General Electric, elec., 3 cys., auto., gold, 2 yrs. old, $85. 213-530-2906.

Skis, Kastle, ladies, 160 mm, w/step-in bindings, Head poles, travel bag, $100. 213-530-4803.

Cornet & case, Yamaha, $125. 213-378-4959.

Miscellaneous For Sale

Sofa, 9', love seat, 6', Mediterranean styles, blue/green velvet, dark walnut side posts, $250; accordion, Contello Victoria, 120 bass, 2 switch keyboard, music stand, sheet music/lesson books, $175. 714-962-4235.

Micrometer Depth Gage, Lufkin, 3 exts., $50; dial calipers, Mitutoyo 12", $50; Helios 13", $80. 714-675-7105.

Lens, Soligor 135mm pie-set, f.3.5, $25; rifle, Glenfield Martin 22, bolt, 8-shot clip, $30. 213-363-6996.

Drum Set, 5-pc. Fibes clear, $800. 213-378-9614.

Dishwasher, Whirlpool, port., $100; range, elec., cont. cleaning oven, $75, both used 1 yr. 714-581-5862.

Pups, AKC, Collie, sable & white, $100 ea.; camper shell, Perris Valley, fits small trucks, $125. 213-328-3306.

Sailboat, Clipper 21' swing keel, fully cruise equipped, 3 sails, VHF/CB antennas, 6 h.p. o/b lg. shaft Evinrude, $3000. 213-823-6245.

Pups, Vizslas, Hungarian pointers, champ. parents, $300-$500. 213-376-7090.

Bedroom Furniture, walnut, king size h/board, 4-drwr. dresser, 2 2-drwr. night stands. Danish design, $195; lamps, 2 36", Mediterranean, antique green & rust, $50. 213-377-9666.

Seat, Cobra, $25; exhaust pipes, stock, $25 for Honda 750. 213-866-5533.

Range, Caloric self-cleaning, gas, harvest gold, ultra-ray broiler, thermo set top burner, $450. 213-373-6139, 213-371-7707.

Ski Boots, Humanic, size 9, worn 6 times, $65. 213-327-0883.

Typewriter, Smith Corona, port., carrying case, $25; serving set, silver, 3-pc., $10. 213-753-7484.

Pool Table, newly recovered, 46.5" x 86.0", balls, cue sticks, $45. 213-430-7388.

Range, gas, Tappan Renaissance II, dble. oven, harvest gold, $175. 213-373-3066.

Wanted To Buy

Piano, any condition. 714-524-6302.

Trumpet, good condition. 714-897-2007.

Camera, Nikkon, 35mm, 2 hi-fi spkrs., & typewriter table. 805-527-6943.

Pup, Cockapoo, female or male, black or silver, 213-370-9978.

Enlarger, for 35mm & 2¼ x 2¼ negatives, prefer condenser type, will consider other, photo light stands, 3 5', prefer alum., consider steel. 213-370-3016.

Chilton, or motor automotive manual, 1965-69. 213-893-5561.

For Sale or Trade

Dodge, 1971 van, ¾-ton, p/s, a/c, mags, cam headers, $3500 or take 4-w.d. as down pmt. 714-249-3719.

Personals

Thank you very much for your concern during my recent hospitalization. NANCI RAE FLETCHER

Many thanks to all my Northrop friends for the cards & visits during my recent illness. OLIE WHITE

If anyone parking in Lots 22 & 20 near Prairie Ave., witnessed the accident Wednesday, Dec. 3 between 7:15 a.m. & 4:30 p.m. involving a white 1972 Luv truck camper, please contact Aircraft Div., ext. 2754. 213-777-3279.

Our sincere thanks to all our friends & co-workers at Northrop for the most wonderful retirement party & gift. GLADYS & MAX PELLERIN.

Many thanks for the beautiful flowers I received while in the hospital. CURTIS MAGGARD & FAMILY

On behalf of my mother & myself, I wish to express my appreciation to everyone for their expressions of sympathy at the passing of our beloved husband & father, Albert Mutterspaugh. MARLENE VIDICH

I want to thank all the co-workers in Depts. 3220, 8883 & NRC for the flowers & cards sent to my wife after her recent accident. R. W. SMITH.

Free

Dog, AKC, yellow female Labrador, to good home w/ children. 714-848-8327.

Pup, German Shepherd, 10 wks. old, male, free to good home. 213-675-2081.

Rocks for fish pond, stone fence. 213-673-0678.

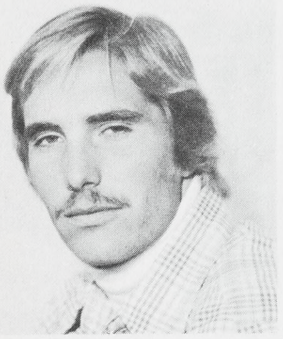
Rides Offered, Wanted

Carpool, P.V. Dr. N. area to Electronics Haw., 8 a.m. - 4:42 p.m., Elect. Haw. ext. 2977, 213-541-8091.

BY CATHY D'AMICO

Christmas Memories Are Recalled by Many

Every Christmas is memorable in its own way, but there is always one that stands out in our minds. It may have been good or bad, heartwarming or sad. However, it is the one we never forget. Here, from around the Electronics Division, are some of the never-forgotten memories of Christmases past recalled by our employees.



Bob Brooks

BOB BROOKS, Platform Electronics Dept., spent last Christmas touring Baja California for 12 days. He and a friend drove down in a van taking along their motorcycles and a lot of clothing and other presents gathered from several friends. On Christmas Day they were about 250 miles south of the border near the village of San Quentin. They had left their van inland and traveled to the coast on their bikes because there were no roads in that area. Every few miles along the beach would be a little village or just a couple of houses. They stopped to rest near the home of an abalone diver who invited them to stay for lunch. The diver and his family would not let Bob or his friend pay for the meal, so before they left they gave the children shoes and clothing that they had brought with them.

Bob Froeschle

BOB FROESCHLE, MX Programs Dept., recently transferred to Aircraft Division, remembers a Christmas he spent in the mountains with his family, two brothers-in-law and their families — eight children in all. The day before Christmas they arrived at their cabin and went looking for a tree, thinking that would be a simple task in an area abounding with pine trees. There wasn't a single tree for sale in the whole town — not even an artificial one. Finally, walking by a store window, Bob saw a display featuring an artificial tree. After she heard Bob recount his dilemma, the shopkeeper offered to loan the tree to the Froeschle family for Christmas Day. When Bob offered to buy the tree, the shopkeeper insisted that she wouldn't take any money for it, only a promise from Bob to bring the tree back after Christmas. When Bob tried to return the tree on Dec. 26, the store was locked up and the owners were out of town. So, he took the tree home and returned it to the shopkeeper in July.

Sydney Whittlesey

SYDNEY WHITTLESEY, Contract Administration Dept., remembers, above all others, her sixth Christmas — the year her older sister decided to expose the truth about Santa Claus. On Christmas Eve she took Sydney downstairs where they peeked into the kitchen and saw their Dad painting a tricycle. Then on to the living room where they watched unobserved while their Mom placed the presents under the tree. Disgusted, she returned to bed. The next morning she enjoyed opening her presents as always, but the magic was gone.

Dick Baggett

DICK BAGGETT, Cost Estimating, spent a very cozy Christmas three years ago with 33 people in his cabin at Mammoth Mountain. It started snowing just before Christmas and continued for five days straight. About five feet of snow fell during that time and because the cabin was situated downhill from the road, they were captives for the duration. Everyday a couple of the men walked to the village three miles away to bring home some food and wine. No one could ski because all the lifts were closed.

Jo Hodge

JO HODGE, Travel Dept., holds closest to her heart the year her daughter, LeAnne, took her first steps on Christmas Day. The whole family was gathered at Jo's aunt and uncle's home in Playa del Rey so that everyone including grandparents were there to see LeAnne take those first wobbly steps toward her mother.

Reuben Reynoso

REUBEN REYNOSO, Digital Electronics Development Group, found out on his first Christmas Eve in this country that Americans do not celebrate Christmas the way they do in his native country, Peru. He spent the Christmas season at the home of some friends and on Christmas Eve, as is his custom, he did not eat all day — preparing himself for the feast he believed would be served at midnight. Several times during the evening, the hostess offered him something to eat but he refused, not wishing to spoil his appetite. Finally everyone went to bed, including a perplexed Reuben — still very hungry. In Peru the order of events is very different. At five o'clock on Christmas Eve, the children go to bed and are awakened at midnight when they find their presents placed next to their beds. Then the families go to church gathering later at various homes for the big Christmas meal.

James Brown

JAMES BROWN, Digital Electronics Group, will always remember the Christmas when he was 10 years old and finally got the bicycle he wanted so much. The day after Christmas he was practicing his new riding technique when something went wrong and he hit the ground quite abruptly — knocking himself out. So, his mother took the bike away for the rest of the Christmas holiday.

Patty Stockham

PATTY STOCKHAM, Personnel Development, recalls her happiest Christmas as a little girl in Colorado. She was one of 14 children and her family was very poor. The family often did not have Christmas and when they did it was very small — one gift for each child. One Christmas, the children were told they would not have any presents and things looked very bleak. Then, two days before Christmas the local banker came to see her mother and told her there had been an error made in her account and that she still had some money left in the bank. There was enough money to buy a present for each child.

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